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China Report

AGRICULTURE

No. 161



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I. GENERAL INFORMATION

RECENT DROUGHT, FLOOD SITUATION REPORTED

Beijing GUANGMING RIBAO in Chinese 22 Jul 81 p 1

[Article: "Responsible Person of the Central Meteorological Bureau Answers Questions by Reporter Concerning Recent Drought and Floods and Future Trends In Our Nation"]

[Text] Recently, the responsible person of the Central Meteorological Bureau answered questions by NCNA reporters concerning recent drought and floods and future trends in our nation. The questions and answers are as follows:

Question: This year, continuous spring and summer drought occurred over large areas in our nation's northern regions. What is the situation now?

Answer: The drought that lasted from summer to spring has persisted for a long time and the situation is relatively serious in Beijing, Tianjin, Shanxi, Shandong, Hebei, Henan, Shaanxi, Ningxia, central Nei Monggol, central and eastern Gansu, western Liaoning, northern Jiangsu and northern Anhui. But since the middle 10 days of June, several relatively heavy rains have occurred in most of the above regions, and the drought has basically been alleviated.

Question: Since the arrival of the rainy season, what is the situation of rain throughout the nation?

Answer: From the latter half of June to the first half of July, rainfall over most of the regions throughout the nation has visibly increased, flood damage has occurred in the southwest, southern China and parts of the northeast. Torrential rains occurred between the last 10 days of June to the middle 10 days of July in Xichang in Sichuan Province, the southern region of Liangshan, and most of the regions of the Sichuan Basin. At parts of the regions, extremely heavy torrential rains fell causing heavy floods in mountain regions, the water levels in rivers drastically rose, dams of reservoirs burst, highways were destroyed, farmland was submerged, and houses were washed away. After the rain, large amounts of water and big floods occurred in Minjiang, Jialingjiang, Tuojiang, Peijiang, causing serious loss to industrial and agricultural production, people's lives and property. From July 14, the Sichuan Basin basically had no more rain. This is beneficial to preventing floods. In addition, torrential rains and extremely heavy torrential rains occurred in Guangdong and Guangxi from the end of June to the beginning of July in southern China. Continuous heavy rain and torrential rain fell from the last 10 days of June to the first 10 days of July over Heilongjiang Province's Hejiang,

Mudanjiang, Nenjiang, Qiqihar and such regions and cities. The amount of rainfall was one to two times that in ordinary years during the same period. Part of the regions were flooded.

It can be seen from the above situation that the regions suffering damage from torrential rains are mostly in the south. If we look at the weather in ordinary years, the period from the last 10 days of July to the first 10 days of August is the period of more rain in the north, therefore, while continuing to care about the damage by floods in the south, we must pay attention to the trends of rain and flooding in the northern regions.

Question: What is the recent weather trend?

Answer: Analysis of the recent weather situation shows that for the coming few days, the southwesterly warm and damp air flow west of the subtropical high pressure over the western Pacific will strengthen again and will flow towards our nation's continental heartland. The cold air carried by the long wave trough of the westerly belt of western Mongolia will move towards the east and slant towards the south. The continued encounter of the cold and warm air will form heavy rain. Preliminary forecasts indicate relatively heavy rain will fall from west to east over the Yellow River valley in the north, the Hai River valley, the Wei River valley, and the Liao River valley. Each region should emphasize the strengthening of flood prevention and measures to drain flood water. Drought has also occurred in some regions in the south during the previous period, especially in some regions in Guizhou, since the beginning of spring, there has been less rain and there has been drought. From the middle 10 days of June to the first 10 days of July, because of continuous clear weather and high temperatures, there was a lot of evaporation which made the drought become more severe. During the middle 10 days of July, the drought in western and northern Guizhou has already been alleviated, but less rain has fallen over the eastern and central regions, and drought still persists. The rainy season over the middle and lower reaches of the Changjiang was shorter this year, the amount of rain was less, peak summer has arrived now, and these regions must be on guard against the occurrence and development of summer drought. At present, a typhoon is forming to the southeast of our nation's Taiwan Province, preliminary estimates show this typhoon will affect the coastal regions of the eastern parts of Fujian and Guangdong. In the south China coastal regions, there will be 50 to 150 millimeters of rainfall because of the influence of the tropical circulation system during the last 10 days of July.

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CSO: 4007/524

WORK ON CONTROL OF DROUGHT, WATERLOGGING, ALKALIZATION REPORTED

Shanghai WENHUI BAO in Chinese 6 Jul 81 p 1

[Article by Fan Dongsheng [5400 2639 3932]: "Control of Drought, Waterlogging, Alkalization in the Plains of the Yellow River, Huai River and Hai River is Hopeful"]

[Text] Scientific and technical personnel of the Beijing Agricultural University, the Farmland Irrigation Institute of the Chinese Agricultural Sciences Academy and other related units have recently drawn up zoning plans for the comprehensive control of drought, waterlogging and alkalization in the plains of the Yellow River, Huai River and Hai River on the basis of large-scale and multiple disciplinary scientific experiments through efforts of a long period and joint cooperation.

This research is one of the nation's key scientific research projects. This control plan requires less investment, the results are quick, generally the cost can be retrieved within 3-5 years. The natural conditions and the productive conditions of the 6 experimental regions covering a total of 200,000 mu all changed fundamentally after comprehensive control. The results in the experimental regions showed that after saline and alkaline land was improved, it was entirely possible to increase the per mu yield to over 200 jin. Calculating on this scale of increased yields, if all of the 50 million mu of saline and alkaline land are improved, each year, an increase of over 10 billion jin of food grains can be harvested. This figure is equivalent to half of the annual need for commercial food grains by the nation's large and medium-sized cities and industrial and mining regions.

The plains of the Yellow River, Huai River and Hai River span the five provinces of Hebei, Shandong, Henan, Jiangsu, Anhui, and the two cities of Beijing and Tianjin, and the area of cultivated land constitutes over one-fifth of the total area of the nation's cultivated land, and the plains constitute the agricultural region with the largest area of wheat, cotton, peanut, sesame and flue cured tobacco crops. This region's good natural conditions have made it the cradle of the Chinese people. But for a long period, the region's economic development has been seriously threatened by damage due to drought, waterlogging and salinization and alkalization of the soil. Because of the effects of monsoon weather, drought occurs in spring and floods occur in summer here, the ground surface is easily covered with alkaline substances, large expanses of good fields gradually become saline and alkaline wasteland. Human activity contrary to natural patterns has also intensified the expansion of saline and alkaline land. From the middle of the

1950's to the beginning of the 1960's, because of improper guiding of the water of the Yellow River and accumulation of water in the plains, the area of saline soaked land in the three provinces of Hebei, Shandong, and Henan increased drastically to 20 million mu.

In January, 1979, the State Scientific and Technological Commission and the Ministry of Agriculture held a scientific research working conference on comprehensive control of the plains of the Yellow River, Huai River and Hai River; it proposed demands and made plans. Within a period of over 2 years, scientific and technical personnel of many departments and multiple disciplines of hydrology, geology, pedology, meteorology and water conservancy joined efforts and basically completed the tasks proposed at this meeting. The plan for the specialized region already drafted utilizes the theories of landscaping and ecology to divide the plains of the Yellow River, Huai River and Hai River into 9 first class geographical zones and 59 second class zones, and control plans suited to the local circumstances were proposed according to the different conditions and characteristics of each zone. The control plans point out that landscape and ecological characteristics of the plains of the Yellow River, Huai River, and Hai River are manifested by an associated occurrence of aridity, waterlogging, salinity and alkalinity, forming a mutually connected and mutually limiting organic whole, and drainage must be the basis of control, centered around the exploitation of underground water in the shallow strata combined with a series of comprehensive control measures of banking fertility in the soil and rational planting, before success can be realized.

The results of the 6 experimental zones in Quzhou in Hebei, Yucheng in Shandong, Shangqiu in Henan prove that large-area and highly efficient improvement of saline and alkaline land is practical. The saline and alkaline conditions in the Quzhou area had been recorded as early as the "Book of Han." The Zhangjia Brigade where the scientific research base of the Beijing Agricultural University is located consumed 50,000 to 100,000 jin of returned food grains in past years. Since 1973, when control work began to 1980, the brigade has provided 1.8 million jin of commercial food grains to the state. Although the Wangzhuang Brigade which began control work in 1978 encountered rare drought continuously for 3 years, the total yield of food grains continued to increase. During the 1st year of control, the yield reaches 240,000 jin, the highest level in history. Last year the yield increased to 440,000 jin. Even though this year's rainfall is less than 40 percent of the amount of rainfall in ordinary years, it is estimated that this season's wheat yield will still surpass last year's by over 20 percent. The 140,000 mu of experimental zone in Yucheng in Shandong underwent comprehensive control in 1974. Now, the danger of drought and waterlogging has been basically eliminated, and the soil fertility has gradually increased. The area of saline and alkaline land dropped from 110,000 mu to 32,000 mu unit yield of food grains increased from about 200 jin before control to 460 jin afterwards. The unit yield of the 12,000 mu central experimental zone reached 650 jin in 1980.

The results of the experimental zones described above were awarded at various provincial and national scientific research conferences. The three experimental zones in Hebei, Shandong and Henan were included in the scientific research project, "man and biological rings," of the United Nations Educational, Scientific and Cultural Organization.

ARTIFICIAL REPLENISHMENT OF UNDERGROUND WATER URGED

Beijing RENMIN RIBAO in Chinese 9 Jun 81 p 3

[Article by Zheng Jingshan [6774 2529 1472]: "Do Not Wait Until There Is a Crisis in Water Sources—Beijing Should Develop Efforts to Artificially Replenish Underground Water in a Big Way"]

[Text] Underground water is a finite resource that must be replenished. Because of the development of productive construction and blind and over exploitation year after year, Beijing City's water sources are deficient, the water level has dropped, the quality of water has become worse, and the situation is becoming more and more serious. We must solve the problem of water sources by opening up sources, conserving the flow and preventing pollution, and at present, we must especially develop artificial replenishment of underground water in a big way.

As urban construction and industrial and agricultural production develop, Beijing City's water sources are deficient, the water level has dropped, the quality of water has become worse and these problems are becoming more and more serious. According to surveys, because of a lack of management personnel, Beijing City's underground water has been excessively and blindly exploited year after year. Each year, the amount of water used surpasses replenishment by 30 percent. Each year, there is a loss of 160 million cubic meters. The hardness and the mineralization of underground water rise each year. Throughout the entire city, four underground funnel regions have already developed and continue to develop. Because of the long period of existence of underground water funnels, partial sinking of the ground surface has already occurred. According to measurements, since 1950, the ground surface of the eastern suburban industrial ward has sunk an average of 20 to 30 centimeters.

The above situation has already affected the people's lives and industrial and agricultural construction. If the situation is not solved it will bring endless disasters.

Solving the problem of water sources must begin by opening up sources, conserving the flow and preventing pollution, it involves a broad scope. This article explores the problem of artificial replenishment of underground water.

Underground water is a finite resource that must be replenished. In the large city where population and industries are highly concentrated and where sufficient river water which can be utilized is lacking, simply relying on nature's periodic replenishment cannot satisfy the need of ever increasing exploitation. For a long period,

to assure stable and reliable exploitation of underground water, the United States, Britain, France, West Germany and the Soviet Union have all developed artificial replenishment in a big way at places where geological conditions are suitable and visible results have been achieved.

Our nation has studied artificial replenishment of underground water for many years and many achievements have been realized. For example, Shanghai established regulations regarding the management of underground water after 1963. Each year, 14 million cubic meters of underground water are exploited, and 17 million cubic meters of water are artificially replenished, thus basically controlling the sinking of the ground surface and controlling the underground water level. The Nangong Reservoir in Hebei used artificial replenishment at a cost of only 20 million yuan to build an underground reservoir of 112 million cubic meters that regulates the amount of water. This not only solved the problem of local water supply, it also assured the amount of water for use in 250,000 mu of cultivated land. The Beijing hydrogeological engineering and geological brigade carried out many experimental studies and made definite progress. In 1976, they directed 560,000 cubic meters of waste water of the Gaojing Power Plant daily into the Yongding River Bed as an experiment in replenishment, raising the water level along the banks of the Yongding River by over 2 meters, slowing down the rate of drop of the underground water level in the Shijingshan area that year, and at the same time, the hardness of underground water was lowered 3 to 5 German hardness [sic], and mineralization by 50 to 100 milligrams/liter.

According to over 100 years of hydrological data, the annual rainfall in the Beijing area is 242 to 1,406 millimeters, the average rainfall over many years is 626 millimeters, and rainfall is concentrated in July and August. The distribution is extremely uneven.

Because rain water cannot be stored, each year about 2.3 billion cubic meters of water are abandoned, about half the total amount of water used by the whole city. If a reservoir can be built at the mouth of the mountain valleys and along the long sandy gravel strips along rivers to stop and store flood water and to use it to replenish underground water, the deficient water source in Beijing city can be alleviated.

For this, we make the following suggestions:

1. We must establish and make sound a water resource management agency, and establish rules concerning the management and protection of water resources. At present, we urgently need to take measures to control the existing wells of industrial and mining enterprises and agencies, we must install water meters and regulate quotas for using water, and levy reasonable water fees. If more water is used, the fees will be increased.

2. Artificial replenishment is not an independent problem. It is closely related to the rational exploitation and utilization of underground and ground surface water. At present, there are many theoretical, technical and technological problems and questions regarding popularization that have to be studied further. Therefore, manpower should be organized to carry out overall geological surveys, studies of artificial replenishment must be expanded, and productive replenishment should be developed.

3. According to Beijing's geological conditions, the policy of "replenishing the west to nurture the east" should be practiced. In the west, flood water and river water should be utilized to replenish underground water to increase its reserve. In the east, the water in the water containing layers that bear pressure should not be exploited or should be exploited less so that the water level and the amount of water can be restored to avoid continued sinking of the ground surface.

4. We must use water to nurture water. Underground water is the same as ground surface water, they are both resources of the state. Reasonable fees must be levied to avoid wastefulness. Especially after replenishment of underground water is launched, it is unreasonable if the beneficiary units do not pay fees. The fees for the use of underground water collected can be used as funds for replenishment work, using water to nurture water.

5. We must strictly limit the use of water for cooling, the use of water for air conditioning and the release of geothermal water. The quality of these types of waste water is good, the quantity is large, and closed circulatory water systems should be built or they should be used for replenishment. We must stipulate that for each well sunk for air conditioning there must be another one for replenishment at the same time, otherwise the well should be prohibited from use and violators should be severely punished.

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SUGAR PRODUCTION REACHES THREE MILLION TONS

Beijing GUANGMING RIBAO in Chinese 19 Jul 81 p 1

[Text] According to information provided by the Ministry of Light Industry, during the sugar producing period from 1980 to 1981, our nation's sugar production again created a new record, total yield reached 3 million tons, an increase of 20 percent over the previous sugar producing period. Among the yield, the total yield of cane sugar was 2.36 million tons, an increase of 10.8 percent over the previous pressing season, the yield of beet sugar was 640,000 tons, an increase of 73 percent over the previous sugar producing period. Our nation's sugar refining industry was affected by the mistaken leftist ideology, and a few years ago, it did not develop rapidly. During the sugar producing period from 1976 to 1977, the nation's production of sugar was only 1.8 million tons. After the Third Plenum of the 11th Party Congress, because a series of policy questions concerning the development of sugar crops was gradually solved, and with the addition of the implementation of agricultural production responsibility systems throughout the broad number of farm villages, the nation's production of sugar gradually increased steadily, during the sugar producing period from 1977 to 1978, the yield surpassed 2 million tons for the first time. During the sugar producing period from 1980 to 1981, it reached 3 million tons.

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CSO: 4007/524

LOW TEMPERATURES DAMAGE EARLY DEVELOPMENT OF PADDY RICE

Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 3, May 81 pp 254-256

[Article by Li Rongqian [0448 1369 0578], Zeng Zishen [2582 1311 3947], and Liu Lihua [0491 4539 5478] of the Department of Biology of Wuhan University: "Cytological Studies of the Effects of Low Temperature Upon the Formation and the Development of Microspores of Paddy Rice*"]

[Text] The formation and development of microspores of paddy rice are more sensitive to the effects of environmental conditions. They are especially sensitive to high and low temperatures. This has been frequently reported domestically and abroad.¹⁻⁵ This article is a morphological and structural observation of cells during the course of the formation and development of the microspores of paddy rice under natural low-temperature conditions, in order to explore the effects and the mechanisms of the sensitive period to low temperatures.

The paddy rice varieties for testing were "hua ai 15" and "er jiu qing." Under natural low-temperature conditions (the lowest temperature was 12°C to 16°C, while the highest temperature was 21°C to 22°C), the plants were set in FAA [term not further identified] between 9 and 10 o'clock each morning, or set in alcohol: acetic acid (3:1) for 4 to 6 hours and then changed to 70-percent alcohol for storage. Paraffin sections were prepared and stained, using Heidenhain's iron hematoxylin, and parts were made into acetic acid carmine slides. Cytological observations of 331 spikelets were made and contrasted with slides showing the formation and development of microspores of paddy rice under normal conditions. The main results are reported in the following.

During the beginning period of meiosis, especially from the prophase to the metaphase, whole pollen, part of the pollen, or most of the pollen mother cells were aborted. Pollen mother cells stuck together, cytoplasm and nucleoplasm became aggregated masses, some were lumps, some were honeycombed, some were vacuolated, some were granular, some had multiple nucleoli, and some were connected (Photographic plate I, 1, 2, 3). During the period from the middle period of meiosis to the stage of four micronuclei in a microspore, lagging chromosomes and uneven distribution of chromosomes occurred. Some showed uneven and abnormal forms of three and four nuclei such as the T-shaped tetrad (Photographic plate I, 4, 5).

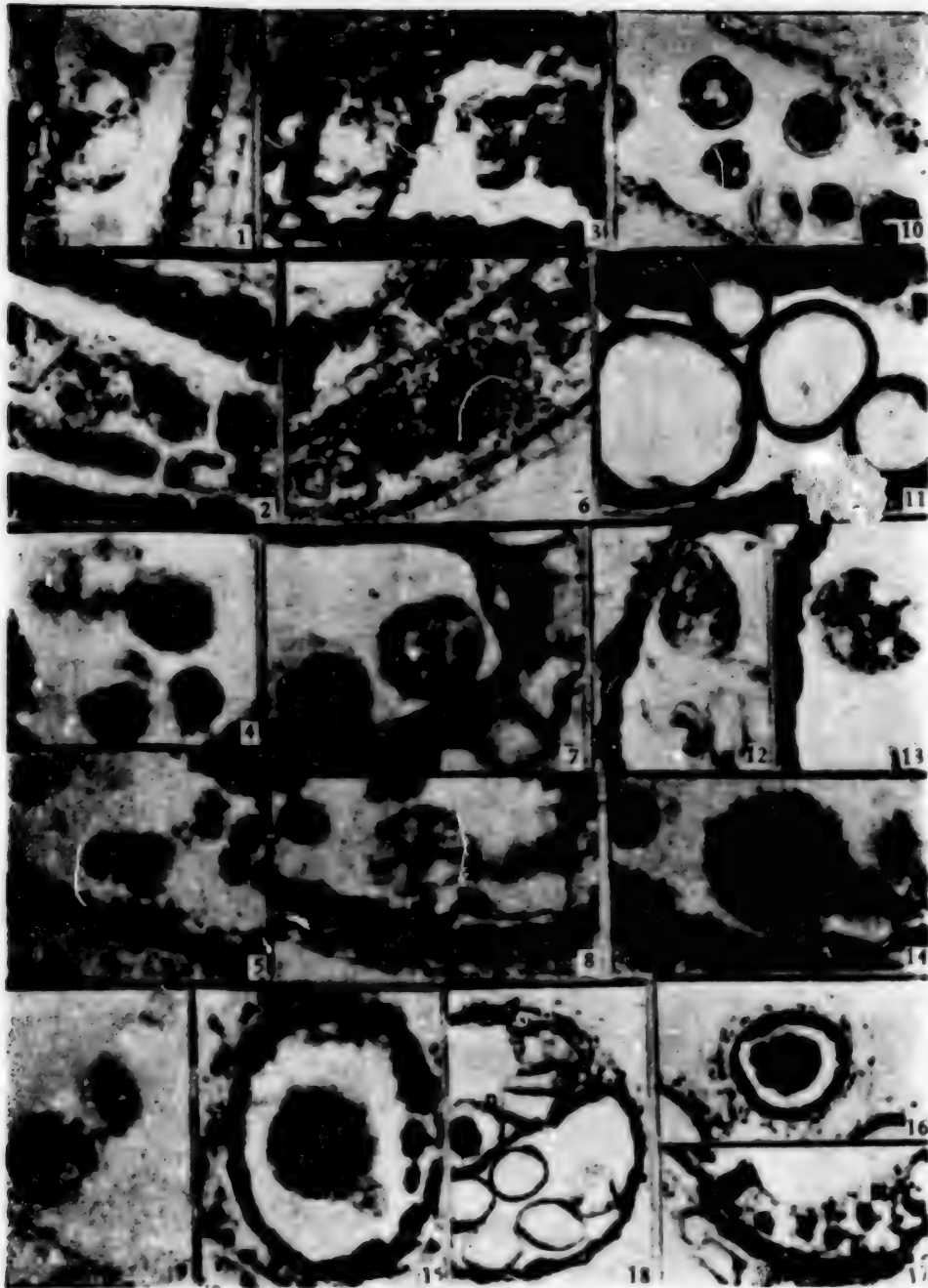
*This article was received in April 1979

When meiosis was about to end, abnormal phenomena of microspores after the tetrad separated were very common. Some showed extranuclear chromatin, while some remained at the triple nuclear stage without the equatorial plate. The membrane wall of some microspores broke and dissolved to form syncytium. There were also a few complete microspores. The cytoplasm of some microspores liquefied and vacuolated, or became wrinkled, shrank, and deformed, or condensed into lumps and plates, or aggregated into masses similar to the separation of the cytoplasmic wall (Photographic plate I, 6, 7, 8, 10). The contents of some microspores penetrated into the pollen sac to form a honeycomb substance. Some formed one or two extremely large nucleoli (Photographic plate I, 9). Some microspores varied greatly in size (megaspore and microspore) (Photographic plate I, 11). The abnormalities of some of the nuclei of microspores were more outstanding, frequently showing two or three micronuclei in one microspore, one large nucleus and two micronuclei, or two micronuclei separating inside a meganucleus (Photographic plate I, 12, 13, 14) or forming tumor-shaped or aggregated multinuclear microspores after many meioses (Photographic plate I, 15, 16). The number of microspores in the anther sac was smaller, and empty anther sacs were frequently seen.

From the results of the above observations, we see that during the course of formation and development of the microspores of paddy rice under natural low-temperature conditions $12^{\circ}\text{C} - 22^{\circ}\text{C}$, about 60 percent of the spikelets were affected to various degrees. Abnormalities occurred more during the early period of meiosis from the prophase to the metaphase and the mononuclear pollen stage (60 to 70 percent), and the effects were more serious. The effects led to the abortion of microspores (or pollen), or to the abortion of later pollen. From the anaphase to the four-cell stage during meiosis, the form and the degree of the abnormalities that occurred were not as serious (40 to 50 percent). Thus it can be seen that [during the earlier period the paddy rice] is more sensitive to low temperatures, while later it is more stable.

During the period of formation and development of the microspores, hypertrophy of the tapetum can be seen; two, three and four nuclei are visible in the tapetum cells; some formed a syncytium (Photographic plate I, 17); and sometimes the cytoplasm and the nucleoplasm were fused. Destruction of the hypertrophy of the tapetum could also be seen, and the cytoplasm was scattered throughout the anther sac in a honeycomb fashion. Some cells between two anther sacs had degenerated, decomposed, and dissolved, gradually forming a large anther sac (Photographic plate I, 18). In some of the anther sacs, three vascular bundles occurred on the anther walls (generally there is only one).

Under natural low-temperature conditions ($12^{\circ}\text{C} - 22^{\circ}\text{C}$), there is a series of abnormal changes in the form and structure of the microspores of paddy rice. These abnormal changes occur more during the period from the beginning of meiosis to the metaphase or the mononuclear stage, and the frequency is higher. The author believes that during these two phases, because of multiple increases in DNA synthesis and synthesis of other materials, preparations for cell division have begun, metabolic activity is very active, and therefore the microspores are easily affected by environmental factors (including low temperatures). Low temperatures can change the course of enzymic functions, cause changes in metabolism, and affect the physiology, giving rise to the possibility of morphological and structural changes. Therefore, during the early and beginning period of meiosis and during the microspore period, the formation and development of microspores show more sensitivity to low temperatures.



Explanation of Plate

1. The vacuolated and honeycombed PMCs.
2. Multinucleoli of a PMC.
3. PMCs sticking each other forming a plasmodium.
4. Lagging chromosomes.
5. "T"-Shaped tetrad.
6. Syncytium due to the degradation of the microspore wall.
7. Aggregated masses of cytoplasm and nucleoplasm.
8. The vacuolation of the cytoplasm of a huge microspore.
9. The hypertrophied nucleoli.
10. Various shapes of aggregated cytoplasm and nucleoplasm.
11. Huge and particularly small pollen grains.
12. A large nuclei and two micronuclei in a microspore.
13. Three micronuclei in a microspore.
14. Two micronuclei in a microspore nucleolus.
15. Four micronuclei in a tumour-shaped microspore.
16. Aggregated masses of pollen grains.
17. Hypertrophy of part of tapetum, showing multinuclei.
18. The fusion of two locules.

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CSO: 4007/466

SHARP INCREASE IN AREA PLANTED TO TOBACCO

Beijing ZHONGGUO CAIMAO BAO [CHINA FINANCE AND TRADE JOURNAL] in Chinese 9 Jun 81
p 1

[Article: "The Area of Flue-Cured Tobacco Planted This Year Shows An Increase of More than 2 Million Mu Over Last Year"]

[Text] This reporter has learned from relevant departments that the decision to increase the procurement price of flue-cured tobacco has effectively mobilized the enthusiasm of the broad tobacco farmers to plant tobacco.

According to preliminary statistics, since the beginning of spring the area of tobacco plants planted by each locality will total over 8 million mu--an increase of more than 2 million mu over the area actually planted last year. The provinces of Henan, Shandong, Yunnan, and Guizhou will increase their planting area over last year's by 25, 18.5, 9, and 33 percent, respectively. The planting areas of other regions producing flue-cured tobacco have also been increased by varying amounts.

The preparatory planting work of each region that produces flue-cured tobacco has been done relatively well. The major concentrated producing regions of Henan and Shandong have prepared large quantities of cake fertilizer in addition to the specific quantities of compound chemical fertilizers supplied by the state. Each locality has tightly grasped the work of cultivating seedlings, the situation with regard to the seedlings is good, and the progress of the transplanting has been rapid. To increase the quality of flue-cured tobacco, each locality has paid general attention to expanding the area of superior seeds, increased the application of phosphorous and potassium fertilizer and controlled the amount of pure nitrogenous fertilizer applied, grasped the rational planting density, and strengthened the training of production and technical personnel.

Each locality also has combined the characteristics of production of flue-cured tobacco and implemented various forms of the production responsibility system. Many production teams in Henan, Shandong, and Guizhou have implemented the measures of unified cultivation of seedlings by the production team, specialized contracts for production, and accounting for salaries in joint production.

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CSO: 4007/466

ACHIEVEMENTS OF HYBRID RICE EXPERTS REPORTED

Zhang Xiancheng

Beijing GUANGMING RIBAO in Chinese 23 Jun 81 p 3

[Article by Reporter Gui Tinggong [2710 2185 1562]: "Not Giving Up Unless He Hits the South Wall--A Visit With Zhang Xiancheng [1728 0341 4453] Who Determined the Male Sterile Restorer Line of Paddy Rice"]

[Text] The quiet deputy plant manager of the Guangxi Agricultural College farm sitting before us does not speak much. But his dark face shows he is a pragmatist. Who can imagine that he is the man who has led the paddy rice heterosis utilization research group of the Guangxi Agricultural College, the man who found the male who has made important contributions in making our nation's paddy rice hybridization techniques the foremost in the world, the man Zhang Xiancheng [1728 0341 4453]!

Zhang Xiancheng is 53 years old this year. He is a lecturer at the Guangxi Agricultural College. After graduating from the department of agriculture of the Guangxi Agricultural College in 1954, he remained as teaching assistant and served as assistant to paddy rice specialist Professor Weng Deqi [5040 1795 7871]. Later he became deputy manager of the college's farm. During the "Cultural Revolution," Zhang Xiancheng was criticized as being a "capitalist" and a "reactionary academic authority" and was struggled against. But after being criticized and struggled against, he continued to plant rice and talked about science and technology. "After liberation," Zhang Xiancheng thought: I studied agriculture, seeking new technical ways to cultivate paddy rice for the nation. This is the spiritual responsibility which I cannot abandon. Thus, he began early to explore the utilization of heterosis of paddy rice.

In 1970, a debate emerged in the agricultural science and technology circles concerning the utilization of paddy rice heterosis. Some people regarded utilization of paddy rice heterosis as impossible. Some even predicted that even if hybrid paddy rice is successful, it may not necessarily be superior. Zhang Xiancheng did not regard it this way. He believed that before seeing the way clearly, the world of science and technology is like a maze, yet, when the road is clear, everything will be clear. Selective breeding of the "three lines" of hybrid paddy rice is also the same.

As expected, in 1972, the agricultural scientific and technical personnel in Jiangxi and Hunan successfully bred a batch of male sterile lines and corresponding sterile free lines, but they did not find the restorer lines. Because the "three lines"

were not complete, hybrid paddy rice still could not be used in production. At the national coordination and work conference organized by the Chinese Academy of Agricultural Sciences, some people said: "wild degeneration" and the sterile line bred by hybridization of cultivated rice may be sterile in quality, and it is impossible to find a restorer line. Some people believed there are ten thousand varieties of paddy rice, and to detect a restorer line among them is like finding a needle in the sea. The task is difficult! Zhang Xiancheng saw clearly that to find a restorer line is very difficult. But, he has a personality of "not going back until he hits the south wall." He thought, the heredity of male sterility in paddy rice is mainly a mutual conflict and mutual effect between the cytoplasm of the wild rice and the cell nuclei of the cultivated rice so that the course of development of the pollen is coordinated thus causing sterility. To restore fertility to male sterility, if we select varieties that are relatively close in relation to wild rice and to the ecological conditions and varieties with a relatively coordinated relationship between the cell nuclei and the cytoplasm for test crossing, success may be obtained.

To find the restorer line as quickly as possible and to complete the "three lines" of paddy rice, he worked hard, forgetting sleep and meals. He transplanted seedlings, gathered pollen, drove away sparrows, chased away rats...frequently still working hard in the rice fields long after the lunch bell had sounded. During summer vacation he stayed at the agricultural college to conduct experiments. During winter vacation, he went to Hainan Island to conduct experiments. To conduct tests in crossing and screening and selecting rice varieties, Zhang Xiancheng went to Hainan Island six times, and spent five spring vacations in Yaxian.

Labor and success are not always proportional. In the autumn of 1972, to conduct test crossing and screening and selection for realizing completion of the "three lines," Zhang Xiancheng selectively combined 26 pairs, but he did not find a variety with a good degree of restoration. He found that among these more than 20 varieties, temperate varieties mostly retained sterility, tropical varieties showed restoration. This shows the original hypothesis was correct. Thus, Zhang Xiancheng and the heterosis utilization research group selected 278 Southeast Asian and southern late rice colony varieties from among several hundred paddy rice varieties, and used the international rice 245 and Philippine rice as the key varieties to cultivate five pairs for propagation. Who knows what happened: the assistant, in order to get some air, opened the window and two pairs were eaten up by birds. On the panicles of the remaining three pairs, Zhang Xiancheng discovered a stronger restoring ability! They had large panicles and more grains, heading was uniform, the anthers were full, showing yellow color, and examination under the microscope showed the development of the pollen was normal, pollination and fruiting were also normal. Zhang Xiancheng discovered this was the paddy rice restorer line that he had hoped for day and night.

But, for hybrid paddy rice to show its characteristics, a strongly superior combination must be found and a good variety must be selected. Zhang Xiancheng thought if he could concentrate all superior materials of the whole nation for selective combination, the goal could be realized much more quickly. He led his assistants and came to Hainan Island and joined in the work of selectively breeding strongly combinations. This time they used wild rice and cultivated rice for crossing and completed 555 combinations, 181 combinations which had a restoration of over 80 percent were selected, of these, 55 combinations had a restoration of over 90 percent. They all showed obvious heterosis. For example, of the 13 combinations of the sterile line and international rice 24, the average length of panicles of the

hybrids was 2.2 centimeters longer than the parents, the hybrids had 5.1 more effective panicles, the hybrids had 27.58 grains more per panicle, the fruiting percentage increased by 4.6 percent, the thousand grain weight increased by 2.5 grams, the weight of the single plant increased 14.5 grams, and the increased yield reached 59.6 percent. During the late crop of 1974, they used the above hybrid seeds to evaluate large field production, they planted 6 mu 2 fen of late rice experimental fields, and the yields were sampled and inspected by the delegates to the third national scientific research coordination conference on hybrid paddy rice. The yield converted to 1,200 jin per mu yield, the large field average per mu yield was 1,133 jin. This achievement strengthened the confidence of all the delegates in the popularization of hybrid paddy rice.

Zhang Xiancheng participated in the successful coordinated research of xian type hybrid paddy rice, and recently he was awarded the special award by the State Scientific and Technological Commission and the State Agricultural Commission. At present Zhang Xiancheng is carrying out research of purification and strengthening of the "three lines," pattern of growth and development of hybrid paddy rice and some basic theoretical research. He said, the utilization of heterosis of paddy rice has a broad future. He wants to march towards the goal of better utilization of heterosis of paddy rice!

Yan Longan

Beijing GUANGMING RIBAO in Chinese 23 Jun 81 p 3

[Article by Reporter Zhang Xiuping [1728 4423 1627]: "Success Originates From Hard Exploration--Interviewing Yan Longan Researcher of the Jiangxi Provincial Academy of Agricultural Sciences"]

[Text] On the morning of 8 June, we visited Yan Longan [7346 7893 1344], researcher of the Jiangxi Provincial Academy of Agricultural Sciences and group leader of the heterosis group of the Pingxiang City Agricultural Science Institute who has made outstanding contributions to the cultivation of the stable male sterile line and sterile free line of hybrid rice. This patient and thoughtful middle aged scientific and technological worker just attended the awards conference jointly held by the State Scientific and Technological Commission and the State Agricultural Commission. He excitedly described to us the research in hybrid paddy rice conducted by him and his colleagues.

After Yan Longan graduated from the Jiangxi Agricultural College in 1962, he worked for several years popularizing agricultural technology. In the winter of 1970, the concerned leadership of Pingxiang City handed the topic of hybrid paddy rice research to him. Yan Longan who was only 32 years old felt that this task was very glorious. He accepted immediately. In spring of the second year, he joined intellectual youth Wen Yousheng [2429 0645 3932] who had returned home. They went to Yaxian on Hainan Island to learn the technology of hybridization of paddy rice. They learned from Yuan Longping [5913 7127 1627] and Li Bihu [2621 1801 3275] who were the first to carry out such research and they used the wild degenerate sterile material obtained from their teacher Yuan to explore the cultivation of the sterile line and the sterile free line. After a period of learning and work, they selected seven varieties for hybrid combinations, and began to cultivate the male sterile line of hybrid rice.

On the day they conducted the first hybridization experiment, Yan Longan and Wen Yousheng began from after 0800 that morning and carefully prepared paddy rice spikelets and pollinated them. They forgot hunger and thirst. Their sweat made their shirts all wet, but they continued to struggle for 7 hours and finally completed the crossing of over 300 paddy rice spikelets. After 3 days, not one of the paddy rice spikelets was fertilized. The unexpected failure frightened both of them, yet the discouraging event did not dampen their enthusiasm. They summarized the lesson in time, found the cause and tried to save the situation by working day and night and artificial fertilization finally succeeded. In this way, they used wild degenerate hybrids to obtain 48 precious seeds and recorded data amounting to 100,000 words.

But, is the offspring of crossings of such wild degenerates sterile or fertile? It was still a guess at the time! Yan Longan and Wen Yousheng returned to Pingxiang and reported to the leadership of the city committee and received attention. The city committee leadership decided to transfer 12 scientific and technical personnel and intellectual youths to establish an experimental group to carry out this research, and Yan Longan served as group leader. Their first task was to let these 48 seeds grow as soon as possible. But the institute did not have an electrically powered thermostat to stimulate building. What could be done? The deputy group leader of the experimental group Li Ruguang [2621 3067 1684] asked the old farmers and decided to use the warmth of the human body to stimulate germination. The comrades of the experimental group used sanitized cotton to wrap the seeds tightly and then cloth to wrap them up. The seeds were placed in the inner pockets of Li Ruguang's clothes. One day passed, 2 days passed, 3 days passed...the tip of the embryo emerged. Li Ruguang carefully took care of the seeds. After 7 days and 7 nights, each of the 48 seeds germinated. Later they flowered. The members of the group discovered that these plants were male sterile. They became excited.

Immediately afterwards, the battle to breed wild degenerate sterile lines began. In the spring of 1971, Yan Longan led the comrades of the group to make over 500 combinations on Hainan Island and returned nearly 10,000 seeds. They sowed these seeds and some of the seedlings that grew were like the female parent, some were like the male parent, some were like wild grass, and the entire field looked like a garden of all types of grass. To quickly select and cultivate the sterile line, they decided to go to the seven provinces and regions of Guangxi, Sichuan and Guangdong to seek teachers. Yan Longan and Li Ruguang went to Guangzhou to seek advice from Professor Zhang who was an expert in paddy rice breeding at the Huanan Agricultural College. They arrived in Guangzhou at the time when Professor Zhang was on leave to Guangxi. They immediately flew to Nanning and immediately learned that Professor Zhang had gone to Kunming. They followed him to Kunming. But at this time, Professor Zhang had already gone to Yunjiang, so they rushed to Yunjiang. In this way, they travelled 10,000 li and finally found the professor. Under his guidance, they paired the plants and selectively bred ten combinations and greatly reduced the scope of selection.

To breed hybrid rice as soon as possible, the comrades of the experimental group worked hard. Wen Yousheng and others who were physically weaker went into the paddy fields under extreme heat and under the hot sun and worked continuously for 5 to 6 hours. They fainted several times because of heat stroke. After they woke up they continued to work. Although Yan Longan's wife had just given birth, and his mother was old, his heart was still in his work. The experimental group went through five generations and over 1,000 hybrid combinations and finally bred two ideal and stable sterile and sterile free lines in 1972. The sterility of the sterile line was 100 percent.

In 1973, after Guangxi, they also successfully found a restorer line that had a strong combining strength, thus making a full "three lines" and applied hybrid rice in production. Last year, the entire province of Jiangxi popularized over 11 million mu of hybrid paddy rice, and they generally produced an increased yield of 20 to 50 percent over ordinary varieties. The strong and superior combination "Shan you No 2" which they selectively bred was planted throughout Jiangxi Province and was also widely planted in 13 provinces, cities and autonomous regions throughout the nation. Yan Longan and his colleagues have contributed greatly to the coordination of hybrid paddy rice research throughout the nation.

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LATE CROP TECHNIQUES TO RECOUP EARLY CROP LOSSES DISCUSSED

Fuzhou FUJIAN RIBAO in Chinese 18 Jul 81 pp 1, 4

[Article by Correspondent Liu Zhicheng [6401 1807 2052]: "Attend to Late Crop Production to Recoup Early Crop Losses; Provincial Department of Agriculture Invites Agricultural Experts to Talk Over Doing a Good Job on Late Crop Production Problems"]

[Text] This year Fujian Province's early rice crop was severely damaged by a serious rice blast infestation and by a "May freeze" such as has rarely been seen. How can late crop production be taken in hand to make up for early crop losses? On 11 July, the Provincial Department of Agriculture invited agricultural experts and scientists and technicians from the Provincial Academy of Agricultural Sciences, the Provincial Meteorology Station, and from some municipalities to talk over this problem. Everyone put forward quite a few constructive ideas.

Need to Build Confidence in Triumph Over Disaster

Comrades attending the discussions unanimously believed that as a result of this year's implementation in Fujian Province of various forms of a system of responsibility for production, the enthusiasm for production of the broad masses of peasants has reached an all-time high, and that growth of the early rice crop had been very good. According to meteorological records for Fuzhou, the "May freeze" from 30 May to 6 June was the longest sustained period of cold since 1903, and it severely damaged the early rice crop in the province. In addition, rice blast and flood disasters in some prefectures have resulted in a serious disaster situation for the province. Leadership organizations in all jurisdictions have made a calm analysis and braced themselves to help the masses accurately summarize the lessons of the disasters and to build confidence in triumph over them. Right now is the busy season of two rushes to harvest and to replant, and it is exceedingly important that the opportunity to do a good job of late season production not be lost. The deputy director of the Provincial Rice and Wheat Institute, Li Senhui [2621 2772 1920], said that a look at early crop production in Fujian Province during the 32 year period since Liberation reveals a tendency, namely that in years of a reduced early crop, the late crop usually showed an increased output and an overall increase in output for the year. This is because following a reduced output from the early crop, cadres and the masses are rather keyed up, and they take very vigorous measures as a result of which they are able to win a bumper harvest from the late crop. Everyone said that this year numerous conditions favor our winning of a bumper harvest from the late crop. First of all, rural villages throughout the province have implemented a system of responsibility for production and the enthusiasm of the peasants for production is very high. Second, since

the smashing of the "gang of four," the province has had increased output from the late crop for 4 consecutive years as all jurisdictions have launched a movement of "the late crop to surpass the early crop," providing rather rich experience in winning bumper harvests from late crops. Third, in most places this year, the early crop ripening period was from 3 to 5 days early, and ripening times was fairly concentrated, and this favors avoidance of cold autumn weather for the double-crop late rice. Fourth, since the province's grain output has shown increases for 4 consecutive years, solid material conditions exist for winning a bumper harvest from the late crop. Everyone felt that we must guide the masses in building confidence in inevitable victory to win a bumper harvest from the late crop.

Take Full Advantage of Late Crop Potential for Increased Output

The seminar conscientiously discussed how to take full advantage of potential for increased output from the late crop. Everyone acknowledged that the key lies in strengthening of leadership at all echelons for late crop production. For a long time the province has tended to emphasize the early crop and slight the late crop. This year this state of affairs has to be turned around. Especially needed is strengthening of leadership in disaster areas. The extent of damage from disasters to the early rice crop varies from place to place throughout the province, so tailored guidance must be given. Support to agriculture by all trades and industries cannot stop at lip-service, but must be translated into action. Urgent attention must be devoted to the struggle against disaster in late crop production. First there can be no contravention of farming seasons in rush harvesting and rush planting to avoid autumn cold. Second is the need to prevent and control blast of rice that may occur over wide areas of the late crop, and endeavoring to take the initiative. Some comrades at a certain level say that the broad masses of commune members exerted a lot of concern and effort in trying to triumph over rice blast for the first crop, but some departments sold the peasants rice blast pesticide that were no longer potent. This positively should not be done. The experts proposed the following concrete actions be taken:

1. For the double-crop late rice, attention must be given to doing things in the right season, to quality, and to maintaining a certain crop area.

In the grain production of Fujian Province, the late crop area and output amounts to more than 60 percent of the total area and total output. Double-crop late rice amounts to more than 60 percent of the late crop. This shows that double-crop late rice offers a very great potential for increased output. During the last 4 years, the increase in output from the double-crop late rice has been 1.6 billion jin, and experience has been mostly in maintenance of the cultivated area and working on yields per unit of area. A look at the experiences of the past several years shows that because they did not do things in the right farming seasons, some mountain regions failed to plant several hundred thousand mu of late crop seedlings each year. This year, if those mountain areas will adopt various measures and plant these late crop seedlings, they will be able to harvest much more grain. Planting of double-crop late rice seedlings must be done pretty much at the proper season. During the past 10 years, annually several hundred thousand mu or even more than 1 million mu of double-crop late rice in the province has not weathered the autumn cold. This year the autumn cold may arrive early, so further careful attention to this problem may be required. In some places where the early crop suffered cold damage, in particular, some plants that had tillered formed panicles, and some commune members were hoping

that unfruited empty glumes might come into milk. They could not bring themselves to plow under the crop and plant the double crop late rice. This is the way to make big losses out of small ones by missing out on the season. Provincial Department of Agriculture agronomist, Liao Changfa [1675 7022 4099], told of such an event. In 1973, Bingnan County's early rice crop of more than 8,000 mu was freeze damaged, and the fruiting rate was only between 5 and 10 percent. At that time, they recommended plowing under the crop at once and planting the late rice crop. As a result, a harvest from 700 to 800 jin per mu was harvested from the late crop and the losses from the early crop were recouped. Some fields the commune members could not bring themselves to plow under. They waited until after the beginning of autumn [around 7 August] to harvest, and they got a little more than 100 jin per mu. The result was impairment of the second crop, and losses were even greater. For this reason, the masses must be told, and there can be no great losses as a result of small ones. If the fruiting rate is very low, action should be taken at once to plow under the crop and rush transplant hybrid rice. This year, the hybrid rice area in the late crop covers more than 50 percent of the total area, and the area occupied by "Guichao No 2" is also very large. Generally the quantity of seeds sown on the seedling fields has tended to be large, so seedlings are weak and will require early transplanting. Furthermore, inasmuch as the vegetative growth stage and the effective tillering stage are fairly short for both hybrid rice and for "Guichao No 1," care must begin even before the fields have been fully planted. If time does not permit cultivation between rows to remove weeds, fertilization should be done first. In some places seedling fields are insufficient. If the season permits in such areas, supplemental sowings of daozhong [0227 4467] varieties should be made, or direct sowing should be done. In some places where seedling leaf blast is serious, leaves may be cut from seedlings and the bare stems transplanted. It is necessary, additionally, to improve quality of transplanted seedlings, and to give attention to shallow and close transplanting. During the late season, temperatures are high and seedlings grow rapidly, so the ground has to be carefully prepared and sufficient base fertilizer put down. Early return to the fields of rice straw should be actively promoted so as to increase the source of organic fertilizer and to be able to plow under the sources of rice blast infection.

2. Intensifying late stage field care of single crop medium to late rice.

This year, Fujian Province's single crop medium to late rice has been increased by more than 200,000 mu, and for 90 percent of it a system of responsibility for production that places responsibility on households or individual workers has been instituted, and plants are doing well. Further intensification of field care during the mid and late season has been done, and increased yields of around 10 percent per mu are possible. Most of the single crop medium to late rice is now in the midst of tillering, and where the jointing stage occurred early, the differentiation of young panicles has already begun. This is a key time for winning a bumper harvest from the single crop rice. First of all, it is necessary to fertilize with panicle fertilizer and flower preservation fertilizer as the appearance of the plants indicate. Most of the single crop rice is distributed in peripheral mountain fields where soil fertility is poor. As a result of insufficient fertilizer during the early stage, some rice seedlings have already begun to turn yellow and lose fertility. Each locale should conduct an examination of its fields and, depending on the conditions of the seedlings, take action during the period of rudimentary panicle differentiation, applying panicle fertilizer depending on the appearance of seedlings to promote differentiation of spikelets, and to get large panicles. At the time of opening during the booting stage, fertilizer should again be applied, depending on the appearance of seedlings, for

maintenance of flowering, and to prevent degeneration of spikelets and increase the fruiting rate. Late stage fertilization should be primarily with phosphate and potash, plus the addition of a suitable amount of nitrogenous fertilizer. Excessive amounts of nitrogenous fertilizer during the late stage is to be guarded against, because it will cause plants to grow wildly but remain in the vegetative stage rather than enter the reproductive stage, and give rise to disease and insect pest infestations. Following panicle formation, fertilization of the leaves should be promoted to extend the functional life of the leaves, thereby increasing the fruiting rate and increasing the per thousand weight of grains. Second is intense examination for prompt prevention and control of diseases and insect pests. During the opening stage and the stage of full heading, in particular, attention should be given to the use of pesticide to protect panicles and to prevent blast of rice at the neck of panicles. At the same time, attention must be given to prevention and control of rice leaf rollers and rice leaf hoppers. Third is intensification of water management. Late rice is fairly sensitive to moisture during the booting stage, the heading stage, and the in the milk stage. Attention must be given to irrigation, guarding against a premature cutting off of water, which might lead to destruction of the roots and premature plant deterioration, and impair coming into milk and fruiting. In mountain fields where water conservancy conditions are fairly poor, in particular, the collection of water and the diversion of water for irrigation following rains should be well done so that drought and a lack of water will not create losses. The period between late July to mid-August is one of high temperatures. During this period, the single crop of rice which is heading and blossoming must be promptly irrigated with running water to lower temperatures so as to prevent high temperatures from causing heat damage, and to help flowering, and fruiting.

3. Diligent attention to early sweet potatoes and active widening of the growing of late sweet potatoes.

Fujian Province has a 3.5 million mu area devoted to early and late crop sweet potatoes. As a result of diseases and insect nests, and drought conditions during the past several years, yields have fluctuated around slightly more than 400 jin per mu. This year, however, as a result of institution of a system of responsibility for production in the province of more than 1.5 million mu of early sweet potatoes, the crop is growing better than last year. Right now, most areas are in the midst of expanding their sweet potato acreage. They must continue to intensify field care during mid and late season, do a good job of cultivating and banking plants with soil, and irrigating to prevent drying out. Early crop sweet potatoes that have been delayed in transplanting and have poorly growing plants should be promptly cultivated and fertilized to prevent "weeds from choking out the sweet potatoes." Small xiang chong [6272 5722] and leaf chewing insect pests should be promptly prevented or controlled.

The late sweet potato crop area in the province amounts to about 2 million mu. The growing season for the late sweet potato crop is short, and the following must be done in order to win high output: (1) careful preparation of the soil with the addition of sufficient base fertilizer; (2) farming according to the season, doing early transplanting to lengthen the growing season; (3) making sure to do reasonably close planting, transplanting disease-free seedlings, and planting more than 4,000 plants per mu to get a greater number of sweet potatoes; (4) early and meticulous care, beginning to care for the plants even before transplanting has been completed so as to get strong fully grown seedlings and the early production of a sweet potato crop.

4. Major effort at interplanting to expand growing in an effort to get a larger harvest from more plantings.

There should be active promotion of the intercropping of late crop sweet potatoes with autumn soybeans to make full use of autumn fallow land and odd bits and pieces of land for expanded planting of soybeans, autumn corn, and autumn sweet potatoes. Experiences in Jinjiang and Huian prefectures show that from the intercropping of late crop sweet potatoes with autumn soybeans, yields of a few score jin per mu and as much as more than 100 jin per mu may be harvested. Intercropped with peanuts, yields of between 100 and somewhat more than 130 jin may be harvested. Intercropped with gaoliang, somewhat more than 50 jin may be harvested. Were the nearly 2 million mu of late crop sweet potatoes in the province to be interplanted with soybeans or autumn peanuts, gaoliang, or sesame, greatly increased outputs would result.

Serious Attention to Guiding Peasants to Make a Start in Scientific Farming

At the seminar, the experts talked about the major natural disasters that damage late crops in the province, namely the "cold dew wind" and disease and insect pests. Under present circumstances, is there any way we can counter them? They made some representative comparisons, one of which was the "cold dew wind" of 1979, which struck the province earlier than usual. All of Guangze County located in the mountains of northern Fujian escaped damage to its double-crop late rice. The cold dew wind did not hurt it. Conversely, in most of the counties in southern Fujian, the double-crop late rice did not escape, and damage was severe. Secondly, this year, the rice blast in Ninghua County's early rice crop was extremely severe. In some communes, every single production brigade had outbreaks; nevertheless, in such a heavy disaster area, there were no disease outbreaks in the early rice crop of individual brigades. These two events illustrate a principle. If only scientific guidance to the peasants will be intensified and technical measures adopted, these two kinds of natural disasters would not be frightening. What is frightening is our relaxation in the leadership of scientific farming. The Fuzhou Municipal Science Committee deputy director, Huang Baoluo [7806 1405 3157], has said that when he went to a rural village and asked the secretary of a party branch how they were guiding the peasants in starting scientific farming, the answer he got was: "Following implementation of the system of responsibility, the farmers will be able to farm the fields without you sticking your nose in." The mentality of this branch secretary is representative. In some places, attention to scientific farming has been relaxed. In addition, at some superior variety farms that have been built up through arduous efforts, farm science teams and such organization no longer carry out scientific experiments. This year, following the early rice crop disaster, some people apathetically accepted lessons from the negative side rather than actively engage in scientific farming. Consequently, vigorous strengthening of organizational leadership of scientific farming and the launching of general propaganda to promote scientific farming techniques is necessary. For the past several years, numerous county, commune, and production brigade cadres have worked together with farm technicians to run experimental fields, guidance fields, and specimen fields. Now it seems that use of such methods to promote agricultural techniques is also workable.

Many comrades also talked about the need to resolutely correct "old, outmoded and useless" points of view in guiding peasants to launch scientific farming. Agricultural production cannot be separated from careful care and work to manage water, fertility,

the soil, and seeds. Our numerous experiences are a crystallization of many thousand years of peasant wisdom. In fact, the "old outmoded practices, that some people deprecate, are experiences that long practice has shown to be effective. For example, putting down base fertilizer, close planting, propagation of sturdy seedlings, caring for plants while planting is still going on, etc. are not to be discarded, but should be given attention year in year out. Naturally, as science and technology develop, many new farming techniques will arise in the future. However, unless the most fundamental techniques are done well, there will be no foundation for new techniques.

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GENERALLY GOOD HARVESTS DESPITE DROUGHT IN SHIJIAZHUANG REPORTED

Hong Kong ZHONGGUO XINWEN in Chinese 7 Jul 81 p 3

[Article from Zhongguo Xinwenshe, Shijiazhuang 6 July: "No Signs of Drought in a Drought Year in Shijiazhuang Prefecture, Hebei Province"]

[Text] The fields of Shijiazhuang Prefecture show no signs of drought even though located in the heart of the great drought region of Hebei Province. Recently a national People's Political Consultative Congress inspection team made an inspection here, feeling surprise at seeing the plump wheat grain that was in process of being harvested, the succeeding crop of lush green corn growing in the fields, and the trees laden with apples, pears, and peaches in the orchards.

Last year Hebei Province sustained severe disaster from drought, low temperatures, and hot dry winds, and summer grain output in Shijiazhuang Prefecture declined by 430,000 tons, a more than 30 percent decline, in the year of greatest decline in summer grain output since the founding of the People's Republic.

Shijiazhuang in its third consecutive year of drought, this year faces a situation such as has not existed since 1921 when, except for the Hutuo and the Zhi rivers, all of the 84 rivers in the prefecture stopped flowing long before. All the waterways, ditches and ponds along the rail line dried up and their bottoms became visible. As a result of overtapping of underground water, the water table everywhere fell by almost 2 meters, and in some places the dry soil layer was as deep as 1 meter. Drinking water was a serious problem for people and livestock alike.

Today, however, the situation is vastly different. The scene was really gladdening in the communes and production teams in Zhao County and Jin County in suburban Shijiazhuang that members of the People's Political Consultative Conference visited. In Zhao County, the wheat is fully 2 chi high, and the grains are well filled out. The peasants happily harvested and threshed the wheat, production moving along perfectly. They said that the wheatfields here had been watered at least four times, and that yields would run to between 500 and 600 jin per mu. Reportedly the places in the prefecture where harvests were best were Zhengding, Gaocheng, Lin and Wujia counties, where harvests have approached the level of the bumper year, 1979.

Members of the People's Political Consultative Conference also inspected markets in Shijiazhuang and in the county seat of Zhao County. There goods are abundant, and the markets are thriving and flourishing. Foodstuffs in the market not requiring

food coupons are a few fen higher in price than the national list price. The long markets display cucumbers, green peppers, hyacinth beans, daycai [1129 0673 5475], tomatoes, apricots, and peaches.

That there are no signs of drought in a year of great drought is an accomplishment won by the peasants through arduous drilling of pump wells and diversion of underground water for irrigation. In counties located in plains areas, underground water resources are fairly abundant. Pump wells in the various counties now number 91,000, meaning that fields that receive no rainfall can have water for irrigation, nevertheless.

The fight against drought in mountain areas is much more strenuous. Some counties depended on water carried in buckets slung from shoulder poles for water with which to dibble seeds into the ground and for watering. Some dug up dry riverbeds to build barriers to interdict the underflow, and some dug large mouth wells with an opening of 30 to 40 meters at a great cost in labor.

Why have the people worked so hard? This is because of the role played by various forms of a system of responsibility for production whereby the principle of distribution according to work is honored. In Xingle Commune, Zanhuang County, commune member Shi Wanle's [4258 5502 2867] family has four able-bodied members, who take turns night and day to draw water out of a well using a windlass. In mountain areas, wells are very deep and a lot of work is required to draw water from them, but they are happy to keep at it. Their allotted 6.2 mu of wheatland produced 3,360 jin of wheat, or a yield of 542 jin per mu, when the stipulated yield had been set at 120 jin. Had it not been for the institution of a system of responsibility for production, this would not have been done. His family received an award of 2,000 jin of wheat.

Nevertheless, the situation is by no means one of unalloyed optimism. In the three mountain area counties of Lingshou, Zanhuang, and Xingtang, where the disaster situation is rather severe, state aid is needed.

Careful calculations show that wheat output from Shijiazhuang Prefecture will amount to at least somewhat more than 1 million tons, a 10 percent increase over last year. This has not been easily attained, and has to be called a marvel.

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CSO: 4007/529

JIANGDU WATER PROJECT 'IMPROVES WATER CONSERVANCY' IN AREA

Nanjing XINHUA RIBAO in Chinese 28 Jun 81 p 1

[Article: Jiangdu Water Conservancy Hub Project Is Powerful]

[Text] Presently our nation's largest power, drainage and irrigation station—Jiangdu Pumping Station has served considerably in resisting drought and draining floods since its construction began in stages. The Jiangdu Water Conservancy Hub Project built around four large pumping stations is the historical milestone illustrating the firm stand of the Chinese Communist Party to serve the people.

Northern Jiangsu is situated at the lower reaches of the Huai River, the Yi River, Shu River and Si River, known always as the "flood water corridor," and for thousands of years, the people here suffered from floods, waterlogging, drought and accumulation of water. When disaster came, the people had to leave their homes and run from the disasters. After liberation, under the call by Chairman Mao that "we must fix up the Huai River well," our province first began by controlling flood water with fortified dikes, opened flood water channels, and an expanded exit into the sea and into the Changjiang; we carried out the project to block the floods and store water in the Hongze Lake, which preliminarily controlled flood water. Then, with the approval of the State Council, our province began to build the Jiangdu Pumping Station in 1961 to draw the water from the Changjiang to aid Huai River, and at the same time, it provided the plus of draining flood water, draining waterlogging and assuring shipping. After 16 years of efforts, in 1977, the Jiangdu Water Conservancy Hub Project centered around four pumping stations was completely built. From then on, the Changjiang and Huai River joined hands to assure bumper harvests, and the history of agricultural development in the northern Jiangsu region began a new chapter.

The Jiangdu Water Conservancy Hub Project is situated on the northern bank of the Changjiang, above the entrance of the Huai River into the Changjiang, at the confluence of the Jing-Hang Canal and Xintongyang Canal. This glorious engineering structure includes 4 large pumping stations, 1 transformer station, 12 regulatory floodgates, 2 ship passing floodgates, and 2 culverts. Its center is the Jiangdu Pumping Station, with a total installed capacity of 49,800 kilowatts, total pumping capability of 473 flow units. It is first in the nation and one of the foremost ones in the world.

Jiangdu Water Conservancy Hub Project has fundamentally improved the water conservance situation in northern Jiangsu. When the flood water of the Huai River flows rapidly along the waterways into the Changjiang, Wanfu Floodgate, Taiping Floodgate, Jinwan Floodgate are all opened to let the flood water spill into the Changjiang. At other times, the floodgates are closed to maintain the water level of the inner river for navigation and irrigation. In years when the Huai River is dry, water in the Changjiang is drawn into the Jing-Hang Canal via the northern Jiangsu segment north to the gravity flow irrigated area along the canal and along the main ditch and a water source is supplied to the Huaibei region to benefit an area of 3 million mu. In years of internal waterlogging, accumulated water in the Lixiahe region can be drawn and drained into the Changjiang to benefit 4,000 square kilometers in area. Gravity flow can draw the water of the Changjiang to supply water for irrigation in the heartland of Lixiahe and supplement water along the coast for culverts and floodgates to wash away silt and protect harbors and for irrigation of the reclaimed region and for washing away salt, benefiting an area of 7 million mu. When the Huai River has surplus water, it can flow through the Jiangdu No 3 station to generate 3,000 kilowatts of electricity. For example, in the autumn of 1970, rain fell over the Lixiahe region continuously for 40 days, at the time, 3 pumping stations had been completed and the pumps operated continuously for 49 days and drained away the accumulation of water in more than 3 million mu of paddy rice fields in time. The drought of 1978 was as severe as has been seen during the past 100 years. The Jiangdu Pumping Station operated all its generators and this not only assured the irrigation needs of the Lixiahe region, it also delivered nearly 1 billion cubic meters of water to some parts of the Huaibei region for drought resistance via the pumping stations at Huaian and Jinhua.

Since completion of the Jiangdu Pumping Station in stages, it has drawn water from the Changjiang, drained waterlogged water and drawn water from the Changjiang by gravity flow for 18 years with a total of 55.8 billion cubic meters, equivalent to 22 times the body of water in Hongze Lake.

The completion of the Jiangdu Water Conservancy Hub project enabled the Lixiahe region in northern Jiangsu, historically plagued by many disasters, to become our province's important commercial food grain base, the yield of food grains has increased year after year at a rate of 6 percent, 50 percent higher than the average rate of increase of the entire province. The cumulative increase in yield of food grains amounts to 45.1 billion jin.

The completion of the Jiangdu Pumping Station is a song of victory of the policy of hardship, struggle and self-reliance of the Party; it is also a glorious achievement of the cooperative spirit of socialism. It is the first large-scale pumping station designed, built and installed by ourselves in our nation. The planning of the entire project is rational. It is the first to use the siphoning spillway, and at the same time, the vacuum break value is designed as a part of the project. This type of interrupted flow is convenient to manage, operation is safe and reliable and it is now being popularized domestically.

INDIVIDUAL WHEAT PRODUCTION QUOTAS DISCUSSED

Beijing RENMIN RIBAO in Chinese 16 Jul 81 p 4

[Article: "The Proof of the Wheat Is on the Threshing Ground, Information About the Summer Harvest in Rural Plains Areas of Central Shaanxi"]

[Text] In early June the correspondent made a visit on foot to a major wheat growing area of China, Babailiqinchuan, where the main emphasis was an examination of the system of responsibility whereby responsibility for wheat production is linked to individual workers. This question has been debated in Shaanxi for more than a year and right up until the time of the wheat harvest, two different views still existed. One view held that now that responsibility for production of crops such as corn and cotton can be linked to individual workers, and since results from pilot projects linking responsibility for production of wheat to individual workers have been very good, this system should be put into general practice. The other view held that wheat, corn, and cotton are different and numerous conflicts exist in linking responsibility for their production, making this system unsuitable for promotion over large areas. The view of the Provincial CCP Committee was that following the summer harvest, experiences should be summarized, the advantages and disadvantages weighed, and a decision made.

The proof of the wheat is on the threshing ground. The correspondent went from Chang'an to Xianyang, to Wugong, to Qianxian, Weinan, and Hancheng. He found that in every place where a system of responsibility had been instituted whereby responsibility for production was assigned to individual workers, the situation was better than expectations. Harvesting was done rapidly, threshing was done cleanly, the sequencing of tasks was good, and the extent of increase in output large. The broad masses of grassroots cadres and masses had already formed a conclusion, namely that assignment of responsibility for wheat production to individual workers was truly good, and the system should be generally practiced on the central plain in Shaanxi.

The Eye-Arresting "Good News in Hancheng"

In the course of his journey, the correspondent saw an investigation report titled, "Great Happy News from Sima Qian's Hometown," which reported great success from the promotion over wide areas in Hancheng County of a system of responsibility for wheat production whereby responsibility was linked to the individual worker. Output from the county's more than 290,000 mu of wheat exceeded 70 million jin, double last year's output, and even 4 percent more than during the great bumper harvest year of 1979.

Last year Shaanxi made the following regulation: Only prefecture level leadership organizations may institute pilot projects whereby responsibility for wheat production is linked to the individual worker; but Hancheng County extended the system over a wide area. During the wheat sowing season, 80 percent of the production teams in this county established a system of responsibility whereby production was linked to the individual worker. At that time, public opinion was in a tumult and the masses had widely divided opinions. People said, "Hancheng has divided up the fields for people to work by themselves!", and "The Hancheng County CCP Committee has committed an area in direction." Letter after accusatory letter reached the Shaanxi Provincial CCP Committee. One after another provincial and prefectural cadres visited Hancheng to make inspections.

Hancheng cadres became alarmed and the peasants were worried. Was it possible that linking responsibility for production of corn and cotton to the individual worker was socialism, but that linking responsibility for production of wheat to the individual worker was capitalism? More than 40 production teams in the county that had just established systems whereby responsibility for wheat production was linked to the individual worker declared the contracts null and void and retreated from them. Faced with all sorts of pressures, the Hancheng County CCP Committee "steadfastly stood its ground." They had the experience of pilot projects in 12 production teams, and the County CCP Committee secretary Liu Qunxiao (0491 5028 2400) and several members of the Standing Committee walked around all the communes in the county, discussed matters numerous times and came to the unanimous realization that there were no mistakes! They encouraged the commune and production brigade cadres to lead actively and, following the summer harvest, to use the results of practice to make a reply.

At the time when the correspondent reached Hancheng, summer grain procurement quotas had already been overfulfilled ahead of schedule. In both mountain and plains areas, the cadres and the masses said that the system of linking responsibility for wheat production to the workers had rendered a great service in making the wheat harvest so good this year.

This assessment was by no means an exaggeration. Though natural conditions were good for the growing of wheat this year, they were not as good as in 1979. In 1979 when the weather was ideal in every way, the county harvested more than 67 million jin of wheat, only to break that record this year with 70 million jin.

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LIVESTOCK FIGURES GIVEN, LIVESTOCK RAISING SYSTEM OUTLINED

Jinan DAZHONG RIBAO in Chinese 14 Jul 81 p 1

[Article: "Fairly Rapid Development of Province's Livestock Industry During First Half of Year; Establishment and Perfection of System of Responsibility for Production Arouses Both Collective and Individual Initiative"]

[Text] As a result of the establishment and perfection of a system of responsibility for production, development of Shandong's livestock industry has been fairly rapid during the first half of the year. As of the end of June, there has been steady development in live hogs. Large livestock animals numbered 3,472,000 a 44,500 head increase or a 1.3 percent increase over the same period last year, for a reversal of a situation of year after year decline over the past 10 years and more in the number of the province's large livestock animals. Sheep numbered 10,547,000 a 580,000 increase over the same period last year, and an increase of 5.9 percent. Rabbits numbered 32,672,000, a 7,565,000 increase over the same period last year in a 29 percent increase. Domestic fowl numbered 99 million, a 10,410,000 increase or an 11.8 percent increase over the same period last year.

In the establishment and perfection of a system of responsibility for production, all jurisdictions have emphasized the summarization of past experiences, and taking into consideration the characteristics of livestock production, have done the following: (1) have adapted general methods to local situations, permitted the co-existence of diverse forms, and have not insisted on arbitrary uniformity; (2) have promoted democracy and respect for the views of the masses; (3) following establishment of a system of responsibility, both parties have signed contracts and guaranteed that they would be honored; (4) constant checking and summarizing for timely discovery of problems and solving of problems, thereby consolidating, perfecting, and improving the system of responsibility. As of the first half of this year, 310,000 of the province's 400,000 basic accounting units in agricultural production, or 76 percent of the total number, had established and perfected a system of responsibility for livestock production. The main forms of these systems of responsibility were as follows: 1. Specialized animal raising. This means that the collective has regularly given livestock to specialized teams or specialized households for feeding in a system of "four fixeds," "three guaranteeds," and "one reward or penalty." The four fixeds are a fixed number of persons, a fixed number of livestock, fixed costs, and fixed remuneration. The "three guaranteeds" means guaranteed fattening to a certain weight, guaranteed reproduction, and guaranteed collection of farmyard manure. By "one reward or penalty" is meant reward for exceeding agreed upon weight, agreed upon reproduction, or agreed upon collection of farmyard manure, and penalty for

underproduction in any of these categories. 2. Specialized contracting with personal responsibility for profits or losses. By this is meant setting a price for a collectively owned draft animal, which is then contracted to a specialized team or specialized household for feeding, the production team providing the needed feed for the animal, and both parties agreeing the specific sum of money to be paid to the production team annually for the use of the animal. Work points are recorded on the basis of the amount of money tendered, all production in excess of quotas reverting to those who contracted use of the animal. 3. Fixing of a value for a collectively owned animal, which is assigned a household, the production team retaining the animal as an asset, but the commune member feeding it and using it and having all rights to it. 4. Specialized households or key point households. By this is meant that subject to the approval of the production brigade and production team, those who do not engage in collective labor, or those who are permitted not to engage in collective production, specialize in the raising of livestock, with both parties agreeing on the amount of money to be tendered to the production team annually. The production team then records equivalent workpoints for labor, and the feeder participates in distributions with any excess earnings reverting entirely to the feeder.

At the present time, all jurisdictions are in process of implementing various policies relating to livestock production to fully arouse both collective and individual initiative so as to raise the meat production rate and the commodity rate of the province's livestock industry in the shortest possible time.

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BRIEFS

NEW VARIETY SOYBEAN--In order to solve the problem of late ripening soybeans delaying the planting of autumn wheat, the Changwei Prefecture Institute of Agriculture in Shandong has bred, after many years of experimentation, an early ripening variety, "Changnong No 3." In fairly large area testing, this variety was shown to have a growing season of only about 35 days, making it suitable for growing with wheat in a system of two crops a year. Yields are around 300 jin per mu, and it has been very much welcomed everywhere. In experiments conducted in the Huang and Huai river basins, the medium ripening variety, "Fengshouhuang," which they cultured, took first place in quantity of output, with outputs of 7.1 to 36.4 percent higher than local varieties, high yield cultivation bringing yields of about 400 jin per mu. This variety has not been introduced to expanded cultivation in 17 provinces and municipalities throughout the country over an area exceeding 1 million mu. [Text] [Hong Kong ZHONGGUO XINWEN in Chinese 7 Jul 81 p 3] 9432

CSO: 4007/529

RURAL ELECTRIFICATION EFFORTS DETAILED

Taiyuan SHANXI RIBAO in Chinese 12 Jul 81 p 1

[Article by Hou Xiangchu /U186 3276 2806]: "Provincial Farm Electricity Departments Support Farms in Doing a Solid Job of Vigorously Increasing Use of Electricity in Agriculture; Support Establishment of System of Responsibility for Agricultural Production and Help Peasants Become Prosperous as Quickly as Possible"]

[Text] By way of lending active support to the establishment and perfection of a system of responsibility for agricultural production and assist peasants in becoming prosperous as quickly as possible, while readjusting the national economy, provincial farm electricity departments have done a solid job on four matters to bring about year by year increases in the use of electricity in agriculture. Facts have demonstrated that establishment and perfection of a system of responsibility for agricultural production coincides with gradual agricultural modernization, and the two advance each other. Industrial, transportation, and financial and trade units must give attention to understanding the new circumstances and the new problems once rural villages have instituted diverse forms of a system of responsibility for production, and they should study to determine the new tasks and new measures necessary to support agriculture and to do a good job of lending support to matters that support agriculture. This is to carry out the requirements of the Third Plenary Session of the 11th Party Central Committee in regard to hastening agricultural development, and it is also a requirement for building a modern, socialist, powerful country.

In order to give vigorous support to the establishment of a system of responsibility for production in agriculture, and to help the peasants become prosperous as rapidly as possible, the province's farm electricity departments have given attention, as part of economic readjustment, to improvements in supplying equipment for transmitting and transforming electricity, to safety inspections to get rid of hidden causes of accidents, popularization of knowledge about using electricity, and training of technical forces, so that use of electricity in agriculture will continue to increase. During the first half of this year, farm use of agriculture throughout the province again increased over the same period last year.

In making readjustments, the first task to which farm electricity units in the province have addressed themselves has been installation and improvement of electrical transformers. During the past 2 years, more than 5,500 kilometers of 35,000 volt and 10,000 volt high voltage lines have been added, and within 2 years, rural low voltage lines have increased by more than 15,700 kilometers. Newly added electrical equipment for farm use has increased by 783,000 kilowatts. Within 2 years, electricity has been supplied to an additional 97 people's communes and 1,709 production brigades. At the present time, the province has more than 61,000 kilometers of high tension lines of more than 10,000 volts for farm use, and more than 95 percent of communes and more than 76 percent of production brigades have electricity. Some of the problems occasioned by lack of complete electrical transporting and transformer equipment, and "bottlenecks" in use of electricity have been solved, or are in process of being solved.

The second matter given attention is vigorous improvement and restructuring of rural electric grids. By using a combination of mainly reliance on locally provided funds augmented by supplemental funds invested by the state, some key facilities for transporting and transforming electricity in rural areas has already been renovated or added to, and 880 kilometers of no longer suitable double strands of wire have been replaced with triple strands of wire to carry electricity. Within 2 years, by mostly using funds contributed by themselves and augmented by the state, 1,874 production brigades in the province have carried out a renovation of more than 5,000 kilometers of low voltage lines. Four hundred forty kilometers of wooden power poles were replaced with concrete poles; 125 kilometers of feeder lines that were not up to specifications were replaced; 3,500 kilovolt-ampere power distribution transformers were changed one after another, and major overhauls were conducted on more than 430 transformers. In places where conditions permitted, capacitors needed to reduce power loss and conserve electric power were installed, effectively increasing the safety and reliability of farm use of electricity.

The third matter given attention was conscientious major inspection of equipment safety, bearing the seasonality of agricultural production in mind. In advance of this year's irrigation, the more than 150,000 kilometers of high and low voltage lines, 450,000 household hook-ups, more than 20,000 power distribution buildings, more than 210,000 power plants, and more than 1.2 million pieces of household lighting equipment were inspected line by line, piece of equipment by piece of equipment, and item by item by workers and technicians under the leadership of county electrical bureaus accompanied by members of communes and production brigades. When a hidden danger was uncovered, it was promptly eliminated. Just before the summer harvest, another major inspection was conducted throughout the province, this time the focus being on safe use of electricity on wheat threshing grounds. Propaganda materials were printed and circulated in vigorous dissemination of general knowledge about how to use electricity safely. Electric shock safety devices were also actively promoted. Half of the counties in the province have promoted low voltage underground lines over 3,000 kilometers as a major way of assuring safety.

The fourth matter given attention was the maintenance of training of technical forces for farm electricity. According to incomplete statistics, in 1980, 85 counties (or municipalities) in the province conducted technical training of more than 27,000 rural electric workers. Last year, 100 counties (or municipalities) conducted fairly systematic technical training and technical examination of more than 32,500 rural electrical workers, fundamentally creating conditions for the safe and economical use

of electricity in agriculture. As of the first half of this year, those rural electrical workers already trained or presently undergoing training, and those managing use of electricity numbered more than 13,000. As technical levels of rural electrical workers rise and with the putting into place of machinery for looking after electricity use, management of rurally used electricity is gradually being strengthened.

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PARTY OFFICIAL REPORTS ON AGRICULTURAL DIVERSIFICATION

Chengdu SICHUAN RIBAO in Chinese 15 Jun 81 p 1

[Article: "Comrade Tan Qilong Points Out After Inspection of Southern Sichuan Areas that Developing Diversification Has Strategic Significance"]

[Excerpt] The first secretary of the Sichuan Provincial Committee of the Chinese Communist Party, Tan Qilong [6223 0796 7893] asked the leading cadres of each level throughout the province to recognize fully the strategic significance of developing diversification and concretely strengthen leadership of this work.

Tan Qilong inspected and studied the problem of how to develop diversification when he visited southern Sichuan recently. After he returned to Chengdu, he said at a meeting of the Standing Committee of the Sichuan Provincial Committee that the present situation in the farm villages is good. Some localities and counties which reported a reduced yield of food grains last year actually had increased yields. Some localities and counties that reported increased yields actually had larger increases than reported. The Yibin area reported reduced yields last year, but it actually realized an increased yield of over 100 million jin of food grains. The Neijiang area reported an increased yield of 500 million jin of food grains last year, but actually the increased yield was 700 million jin. This year, the winter food grains and oil bearing crops in these regions again realized large-scale increases in yield. The progress of spring production, the quality and popularization of new techniques are all better, especially since the various types of agricultural production responsibility system have been further implemented, the farmers are enthusiastic and the morale is high. If serious natural disasters do not occur, there are high hopes of producing agricultural bumper harvests this year.

He said, as the food grains of the entire province continue to increase in yield, the food grain rations of the farmers have also increased. The farm villages are undergoing new changes, most farmers have enough to eat because of increased yields and are progressing toward the development of diversification, increasing cash income, gradually advancing from poverty to wealth. We must fully recognize this situation, take forceful measures, insist on implementing the spirit of the documents concerning the development of diversification issued by the Central Committee to hasten the development of diversification.

Tan Qilong emphasized that we must start out from the actual situation in Sichuan and fully recognize the strategic significance of diversification in farm villages. He said, in our nation's agricultural development, there are unfavorable factors

of less cultivated land, a large population, more consumption, and a low labor productive rate but we also have rich natural resources and rich labor resources which are huge advantages. Sichuan is similar, and they are more outstanding. The entire province has 100 million people, there is only nearly 100 million mu of cultivated land but there are 110 million mu of forests, 160 million mu of grassland, about 200 million mu of unclaimed mountains and grassy slopes that are suitable for forestation and grazing. There are over 10 million mu of water surfaces. When we develop agriculture, we cannot see only the 100 million mu of cultivated land. We must look at utilization of all the land, establish the macroagricultural viewpoint in production structure, establish the comprehensive foods viewpoint in the structure of foods, exert efforts to break through the limitations of the unfavorable factors, fully develop the function of favorable factors, and develop forestry, livestock production, sideline production and fishery on an overall basis. Only in this way can the rich resources be most rationally utilized and a good macro-agricultural ecological system be established and the best economic gain be obtained.

Tan Qilong said, developing diversification well is the necessary road to becoming rich in the farm villages. Many years of experience prove that for the farmers to become rich, simply producing food grains will not work, the economy of commercial products must be developed in a big way and establishing diversification well is the key link in developing the economy of commercial products. The 17 Brigade of the Qianjin Commune in Gonglai County is located on flat land, each person averages 1.2 mu of cultivated land. As they grasped food grain production, they also grasped diversification including 22 projects of livestock production and processing of agricultural and sideline products. Last year, the total production value of collective production and family sideline production of the brigade averaged 1,591 yuan per person, actually realizing a per capita average production value of \$1,000. Many facts show that for the farm village to become rich, the road of diversification of agriculture, forestry, livestock production, sideline production and fishery production and comprehensive development of agriculture, industry and commerce must be followed.

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FARMERS SEE SCIENTIFIC TECHNOLOGY AS KEY 'TO IMPROVED YIELD'

Beijing GUANGMING RIBAO in Chinese 6 Jul 81 p 1

[Article: "Agricultural Departments of Each Locality in Sichuan Province Sign Technical Joint Production Contracts With Families and Farmers Contracting Production, the Results Are Visible and Are Welcomed"]

[Text] Since last year, the agricultural departments of each locality of Sichuan Province have greatly improved the level of scientific planting by farmers and promoted the development of agricultural production by signing technical joint production contracts with farming families to contract production to families in farm villages and satisfy the urgent demands of the contracting families and farmers for scientific technology.

The farm villages in Sichuan have in recent years implemented conscientiously the farm village economic policy established by the Central Committee—various forms of the agricultural production responsibility systems have been rapidly established, and a definite proportion of the farm families holding family contracts has been established. These farmers have relied on their physical strength to increase production to the ultimate degree and have clearly seen that further to improve unit yield, one must mainly rely upon scientific technology. They have rushed to wherever training of agricultural technicians and wherever technical field meetings are being held when they hear about them; they listen and frequently the number of farmers "attending" outnumber the official participants. Some have learned technology from each other, many farmers have sought out information about technology, and many farmers have traveled across mountains to "invite technology." Facing this new situation, the agricultural departments of each locality in Sichuan Province took the initiative to sign technical joint production contracts with farmers of families holding contracts for production to send scientific technology to the farmers, and good results have been obtained.

The technical contracts signed by the agricultural departments of each locality in Sichuan and the farmers of families holding contracts for production were mainly of three types. The first type of contracts stipulated that technicians of the departments of agricultural technology sign directly technical joint production contracts with the farmers. The farmers held the contracts and let the technicians "do their job" at the locations of contracted production and unit yield quickly increased further. A technician of the Agricultural Bureau of Peiling County signed a technical joint production contract for production of rape with farmers of 10

families holding contracts for production. He selected superior varieties, went to the fields to carry out field management and did everything scientifically. This year, at harvest time, the average per mu yield of rape seed of 18 mu reached 153.5 jin, a net increase of 93.5 jin over the previous year. The actual cost was 4 yuan less than the contract cost. The farmers of the 10 families also learned the techniques of cultivation using superior varieties and superior methods to create high yields. Everyone was happy.

The second type of contract stipulated that the farmer technicians sign technical joint production contracts with farmers of families holding production contracts. This type of contract is supported and given technical guidance by the county Agricultural Bureau. The Agricultural Bureau first trained a group of farmer technicians, then supported the farmer technicians who signed the contracts. At the same time, the region and the commune also regularly checked on the farmer technicians to see how they had been carrying out their duties and provided material supplies and logistical support. Because technical measures were implemented, and with the close cooperation of the party and administrative departments, the results were generally good. In Fengjie County this year, under the organization of the region and the commune, the Agricultural Bureau trained farmer technicians who signed technical joint production contracts for corn with farmers of 10,000 families holding production contracts in the Xinglong region. Inspection during the middle 10 days of April showed that in the 10,000 mu of corn of these 10,000 families, the plants germinated 10 days earlier than those planted with the old method, and the growth was good. The farmers clearly saw by contrast the power of scientific techniques, and insisted that next year the wheat planting must also be done by signing technical contracts with the farmer technicians. The farmer technicians have changed from being "just another guy" in the past to a "piece of treasure."

The third type of contract stipulated that the agricultural science research units of the locality and the county and the departments of agricultural techniques sign technical service contracts covering family sidelines with farmers of families holding production contracts. Farmers welcomed this method very much. Veterinary hospitals of some communes in Changshou County inoculated chickens to prevent chicken plague and chicken cholera for the farmers of families holding production contracts. The veterinarians inoculated each chicken twice a year and charged only 1 jiao, thus assuring that the chickens would not die of chicken plague within the year. Last year, 24 chickens would not die of chicken plague within the year. Last year, 24 chickens of commune members of 1 family of the Shuanghe Brigade were inoculated, they grew strong and healthily while 160 chickens of farmers of 42 families were not given inoculations and they all died of chicken pest. This year, farmers of 18 brigades all signed technical service contracts with the commune's veterinary stations and all chickens were given inoculations.

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CSO: 4007/510

'SEIZING THE TWO FARMING TASKS' BASICALLY COMPLETED

Chengdu SICHUAN RIBAO in Chinese 12 Jun 81 p 1

[Article: "'Seizing Two Farm Tasks' in Our Province's Villages Is Basically Done; Winter Food Grains and Oil Bearing Crops Realize Bumper Harvests, Spring Transplanting Is Timely and Quality Surpasses That of Past Years"]

[Text] Our province's farm villages have basically finished "seizing the two farming tasks." The results of harvesting and threshing of winter crops show that this year's winter food grain and oil bearing crops again realized bumper harvests. Even though the planting area of food grain crops was less than last year's by 2,575,000 mu, the total yield of food grains of the collective still maintained last year's level. The area of rapeseed expanded, unit yield increased, total yield created the highest record in history. Progress of spring transplanting was faster than last year. The quality of transplanting at most localities surpassed past years. According to statistics up to the first 10 days of June, the entire province has already transplanted 42 million mu of early and intermediate rice (1.63 million mu of early rice), the area of superior varieties covered 85 percent, hybrid paddy rice reached 12 million mu. The entire province estimates that this year 45.9 million mu of early and intermediate rice can be planted. The entire province has already sown 23.6 million mu of corn, constituting 98 percent of the planned area for corn at each locality. It is estimated this year it can reach 24.5 million mu, an increase of 500,000 mu over last year. The entire province has already planted about 8 million mu of sweet potato, it is estimated that before June 15th, transplanting will have been basically finished, and the area will approach that of last year. Transplanting of the economic crops of cotton, peanuts, sugarcane, flue cured tobacco and ramie has been finished, and most localities have completed the transplanting plans better.

At present, each locality is further perfecting the production responsibility system, grasping tightly field management of spring crops centered around sidedressing and weeding. Agricultural departments of many localities and counties have assigned large numbers of technical backbone workers to conduct concrete guidance on the first line of production and teach management techniques.

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COTTONFIELD MANAGEMENT MEETING HELD, THREE DEMANDS MADE

Chengdu SICHUAN RIBAO in Chinese 17 Jun 81 p 1

[Article: "Provincial Government Holds Cottonfields Management Meeting, Makes Three Demands Upon Each Cotton Producing Region"]

[Text] Recently, the provincial people's government held a cottonfields management meeting in Xichong County to make three demands upon each cotton producing region:

1. Further strengthen and perfect the cotton production responsibility system. Those production teams that have not yet established a responsibility system that suits the situation of the production team. Production teams that do not have a perfect responsibility system must use various methods to perfect and fulfill the system. The method of personal responsibility for field management and rewards and punishment directly related to yield must be advocated and implemented to establish contracts for the production of cotton, work points and division of investment to the families. At the same time, mutual assistance measures in labor and techniques must be organized to promote a balanced development of cotton production.
2. Scientific planting of cotton should be carried out to teach cotton planting techniques to the families. At present, the technical measures of cottonfield management must be conscientiously implemented, the three key measures reasonable fertilization, prevention of insect pests and timely topping must be well understood. The popularization of cotton planting techniques and joint production responsibility systems must be tested by specialized groups and special persons to implement uniform prevention of insects and control of diseases.
3. Understanding must be improved and leadership must be strengthened. The working groups in regional and county cotton production must be strengthened and filled. There must be division of authority. The cadres of each level in cotton production regions must understand cotton production well like understanding food grain production and include cotton production in the review of the work of cadres.

9296

CSO: 4007/510

RICH UNDERGROUND WATER FOUND IN LATERITIC STRATUM REGION

Beijing GUNAGMING RIBAO in Chinese 20 Jul 81 p 1

[Article: "In the Lateritic Stratum Region of Sichuan Which Is Seriously Deficient in Water a Certain Unit of the Capital Construction Engineers Found Underground Water; the Home Village of Comrade Zhu De, Yilong County Seat Now Has Cool Well Water"]

[Text] A certain unit of the capital construction engineers looking for water in the crevasse zone of the lateritic stratum discovered a rich underground water source and contributed towards solving the difficulties of water for local irrigation, industrial production and livelihood of the people in the towns and villages.

The red layer is a type of geostratum consisting of sandy mudstone with a poor water content. The commander of a certain unit of the capital construction engineers and technicians conducted hydrogeological surveys in the Sichuan region and took the task of seeking water in the lateritic stratum region as the goal. In 1977, they drilled a water well which gushed over 15,000 tons of water a day from the synclinal structure in the lateritic stratum region in Nanjiang in northern Sichuan. This lateritic stratum region is rarely seen. To explore new ways and uncover the pattern of richness in water of the lateritic stratum, the capital construction engineers unit conducted large area ground surface surveys and exploration in northern Sichuan, widely inspected the topography, geomorphology and geological structural conditions of the lateritic stratum, analyzed the patterns of concentration of underground water, and discovered that the lateritic stratum at the tectonic crevasse belt under definite geological and geomorphological conditions has a relatively rich source of underground water. On the basis of summarizing the patterns of richness of water in the lateritic crevasse belt, this unit also carried out a large amount of actual surveys and exploration, repeatedly carried out scientific proof and drilled 155 holes into the crevasse of the lateritic stratum. Over 80 percent had water and 50 percent were high yielding wells that were worth developing.

Yilong County seat in Sichuan is the home of Comrade Zhu De. It is located in the lateritic stratum region. In the past, drinking water was very hard to find. In drought, the entire town's people had to rely on the caravan of carts to go to a place over 100 li away to get water. When he was alive, Comrade Zhu De and responsible comrades of the Sichuan provincial committee mentioned many times that ways should be found to solve the problem of water source in this region. Not long ago,

a certain unit of the capital construction engineers dispatched a squad of hydro-geological survey squad which successfully sank a deep well producing 420 tons of water a day, and the spring water was clean and cool. This has solved the worry of a lack of water for many years for the local people.

9296

CS0: 4007/524

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9717
CS0: 4007/508

NEW COOPERATIVE MOVEMENT INVOLVING SHARE PURCHASES REPORTED UNDERWAY

Hong Kong CHENG MING JIH PAO in Chinese 22 Jul 81 p 1

[Article: "New Cooperative Movement Appears in Rural Henan; Peasants Themselves Organize New Economic Federation; Cooperative Running of Agricultural Byproduct Industries and Operation of Industries and Businesses"]

[Text] Recently, following the fixing of output quotas on a household basis in the rural villages of Henan, a new trend toward voluntarily called for "cooperative" and "federation" has appeared. This is a new kind of "cooperative movement" different from the "cooperative movement" of some years back.

A report in RENMIN RIBAO has said that in order to expand further production, some peasants in Xinjun voluntarily organized new economic federations. Now the scale of federation is getting larger and larger, the scope broader and broader, and the participating peasant households more and more numerous. According to early April statistics from Zhoukou Prefecture, households participating in federation in the prefecture number 192,948, or 12.17 percent of the total number of households.

One form of organization of the federations is to have three to five commune member households or as many as more than 10 households federate. An overwhelming majority are of this kind. In another form, brigades or production teams federate with a certain number of peasant households, with generally fairly large amounts of funds being invested and collectively owned land being used. The method of investment mostly entails equal buying of shares. In the case of Shouying Brigade, Mengzhai Commune in Lankao County, an investment company was set up and shares sold at 100 yuan per share, one share per person. More than 30,000 yuan was thus accumulated to start up an oil pressing plant, a repair and spare parts sales department, a messhall, and a tobacco and wine commission agent. In other cases, each person invests what he has, that is to say that those who own things (including houses, equipment or land) invest things; those who have funds invest funds; and those who have skills invest skills. This method is used principally in federations between the collective and commune members.

The principal operating methods and scope of these economic federations are: (1) joint buying of farm machines and implements, and livestock; establishment of machine plowing teams, spray irrigation teams, and well sinking teams to develop agricultural production; (2) federation of skilled craftsmen and people with special skills to engage in agricultural byproduct processing industries such as for grain and cotton oil, lumber, and other things; (3) federation to engage in the construction industry or production of building materials.

Methods of distribution in these federations are principally of three kinds: One is distribution on the basis of shares owned; a second is a combination of payment in accordance with work and on the basis of money shares; and a third is distribution in accordance with labor.

9432

CSO: 4007/536

Agricultural Experimentation

AUTHOR: DING Changling [C702 2490 7881]
PAN Deliang [3382 1795 5328]
ZHOU Guoqi [0719 0948 3825]
ZHAO Shengshan [6392 4141 3790]

ORG: DING, PAN of Institute of Crop Research, Shanghai Municipal Academy of Agriculture; ZHOU, ZHAO of Extension Station, Shanghai Municipal Bureau of Agriculture

TITLE: "Research on Early Rice High Yield Technology in Shanghai Suburbs"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 81 pp 1-4

ABSTRACT: Shanghai suburbs have about 1,800,000 mu of early rice acreage. In the 70's, the yield varied between 657-789 jin/mu, averaging 724.1 jin/mu. It was relatively a stable yield but the increase was slow and not even. There were many commune-brigades producing above 800 jin/mu and fields of over 1000 jin/mu yield were not very rare while commune-brigades with 500-600 jin/mu yield were also common. An experiment was carried out, using mainly high yield farm breeds, to establish a high yield culture formula, for the purpose of transforming the low yield elements. Technical analysis of the 16 participants in the experiment in 26 plots revealed that sparse seeding at a proper time to grow strong seedlings to be transplanted at a proper age, adopting a reasonable transplanting density to improve the rate of photo-energy utilization, early application of additional fertiliser, and timely draining of paddy form the essential high yield technique.

AUTHOR: None

ORG: Tissue Culture Office, Institute of Crop Research, Shanghai Municipal Academy of Agriculture

TITLE: "Breeding of the Early Ripening Late Geng 76057"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 81 pp 5-6

ABSTRACT: In recent years, the yield of the late season rice in Shanghai suburbs has been low and unstable, mainly due to the weather. According to the statistical data from 1873 to 1972, when late rice completes heading on 22 Sep, there has been 21 percent of damage by low temperature. For this reason breeding early ripening and low temperature tolerant late rice is an important measure for the region. The new technique of anther culture to produce haploids was employed to produce the 76057 breed. It has been tested for 3 years in the region and the desired result was obtained. It has now been approved for production. This paper reports the process of breeding this variety of early ripening late geng rice.

AUTHOR: None

ORG: Grain Cultivation Research Office, Institute of Crop Research, Shanghai Academy of

TITLE: "Growth and Development Characteristics of Huabei-76057 and Its Application Value"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 81 pp 7-8

ABSTRACT: The Huabei [anther culture] 76057 is a product of the institute, bred out through compound hybridization of xian and geng varieties and anther culture. Regional tests, production demonstrations, and comparative observations of various cultivation factors proved it to have the merits of short growth and development period, early ripening, late transplant tolerance, mild disease susceptibility, relatively fast starch filling, high fruiting rate, good rice quality, and high husking rate. In Shanghai suburbs for late season cultivation of medium fertility level, the proper transplant time is the beginning of Aug. Tests in 79 and 80 yielded 19.6 percent higher than Jianong-15, 13.6 percent higher than Huxian-19. When it is transplanted before 10 Aug as the last rice crop, its yield is stable. In 1980, the Liuyu Commune of Yangzhou used it as the late season rice, the yield was 658 jin/mu, as the intermediate rice, the yield was 932 jin/mu, an increase of more than 20 percent over the commune's farm breed Shuangfeng No 4. Merits of Huabei-76057 and essential cultivation techniques are detailed.

AUTHOR: PANG Zhenchao [1690 2182 3390]

ORG: None

TITLE: "Photo-energy Analysis of Post-wheat Direct Planted Cotton in Shanghai Suburbs and the Banks of Hangzhou Bay"

SOURCE: Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 5 Jun 81 pp 11-13

ABSTRACT: Shanghai suburbs and the banks of Hangzhou Bay belong to the Changjian Valley cotton region, with basically similar climatic condition and cultivation system. Before the cotton, the crops are the 3-wheat [wheat, barley, and naked barley] and rape. The time-honored tradition is to intercrop cotton in the wheat field. In recent years, there are gradual experimentations of cultivating cotton seedlings to be transplanted after the wheat harvest, or direct seeding of cotton after the wheat harvest. Some believe the yield of the latter system is neither high nor stable, but the results of experiments of recent years have demonstrated that high yield may be obtained if the growth and development principle of post-wheat directly seeded cotton is mastered. Based upon domestic and Japanese survey data, this paper analyzes the effective solar radiation of the various growth and development stages of directly seeded cotton, following the wheat harvest, for photosynthesis of the cotton crop and the utilization rate of photoenergy. It concludes that the effective radiation from the bud-appearing stage to the blooming stage is higher for the directly seeded cotton than the intercropped cotton.

AUTHOR: DENG Dasheng [6772 6671 0524]

ORG: Sichuan Provincial Research Institute of Nuclear Applications, Chengdu

TITLE: "Early Mutants From ^{60}Co - γ Irradiated γ_2 and Heritability and Genotypic Correlationship of Its Major Characters in Rice 'Taiyin No 1'"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 4, Jul 81 pp 22-24

ABSTRACT: Radiation breeding practices have proved that ^{60}Co - γ irradiation is effective for reconstructing the growth and development period and the height of the stalk of rice and the second generation of irradiated plant, γ_2 is the important generation for mutant selection. Irradiation can induce mutation in the ripening time, stalk height, stalk shape, spike type, spike weight, grain type, grain weight, leaf type, leaf color, etc. or the multiple of these. This paper reports an experiment with Taiyin No 1, one of the relatively radiation tolerant breeds. The half lethal dose of its dry seeds may reach 58kR, higher than many other breeds. According to the results of the experiment, early ripening mutants of γ_2 of this breed may be obtained with irradiation of dry seed, wet seed, or germinating seed with ^{60}Co - γ at a rate of 0.63 percent. The test weight, heading time, and stalk height heritability of the early ripening mutants is relatively high, therefore, direct selection for these characteristics may also be feasible. The problem of suitable dosage in radiation breeding of crops is also discussed.

AUTHOR: MU Qihua [3018 4428 5478]
YANG Zhentang [2799 2182 2768]
CHEN Zeguang [7115 3419 0342]

ORG: All of Jilin Municipal Research Institute of Agriculture

TITLE: "A Study on Increasing Induction-frequency of Pollen Plants in Maize (Zea mays L.)"

SOURCE: Beijing YICHUAN [HEREDITAS] in Chinese No 4, Jul 81 pp 25-28

ABSTRACT: At present, the problem of low induction rate exists in all attempts of anther culture of maize; therefore, extensive application of pollen plants is rather limited. In 1978, the authors inoculated 51,290 anthers and produced 1,683 calluses, averaging an induction frequency of 3.28 percent. Finally, 345 sprouts evolved; the rate of green sprouts evolving from 100 anthers was, therefore, 0.67 percent. In 1979, as a continuation of the experiment, the callus induction frequency was 8.81 percent, and the sprout evolution rate was 1.61 percent. Details of the experiment of 1978-79 for the purpose of increasing the induction-frequency of pollen plants of maize are reported, including the media and methods tried.

6248
CSO: 4009/437

Agricultural Experimentation

AUTHOR: SHI Mingsong [4258 2494 2646]

ORG: Shahu Breeding Farm, Mianyang County

TITLE: "Preliminary Report of Late Geng Natural Dual-purpose Line, Its Selective Breeding, and Its Application"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 7, Jul 81 pp 1-3

ABSTRACT: Selective breeding of Nongken-58 produced a stalk of naturally sterile late geng rice. It has the characteristics of being sterile under the condition of long daylight and high cumulative temperature and being fertile under the condition of short daylight and low cumulative temperature. When it is sterile, it may be used for preparing hybrid seeds; when it is fertile, it may be used to produce seeds. For this reason, it is named as a dual purpose line. This discovery conveniently resolved the problem of preserving the sterile characteristic of naturally sterile geng rice and opened a new way of rice hybridization. At the same time, it also presented a new subject matter in genetic breeding theory. The process of selecting and breeding out this dual-purpose line and its applications in production are reported.

AUTHOR: GUO Yuntao [6751 0061 2711]
LI Jiashu [2621 1367 2579]

ORG: Both of Institute of Soil and Fertilizer, Hubei Provincial Academy of Agriculture

TITLE: "Movement of Nitrogen Fertilizer in Paddies and Research on The Reasonable Technique of Application"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 7, Jul 81 pp 14-18

ABSTRACT: Tests by Nanjing Institute of Pedology indicate that the utilization rate of ammonium sulfate applied on the surface averages 43 percent; 22 percent amounts to the residue and 35 percent is lost. The loss is mainly due to reverse nitrification. The authors used ^{15}N labeled nitrogen fertilizer for 2 years of pot experiment. Results demonstrate that the utilization rate is higher and the loss through evaporation is less when the fertilizer is applied in the entire soil layer, instead of on the surface in several applications.

AUTHOR: DENG Fengyi [6772 7364 0308]

ORG: Jingzhou District Bureau of Agriculture

TITLE: "Developing Chemical Fertilizer to Promote Grain Production in Jingzhou District"

SOURCE: Huanggang HUBEI NONGYE KEJUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 7, Jul 81 pp 19-21, 36

ABSTRACT: Since the liberation, through water conservancy construction, the development of leguminous green manure, the extension of high yield superior breeds, and the improvement of cultivation techniques, the grain production of Jingzhou District has been increased 2.38 fold, on the foundation of 31×10^8 jin of 1949. It has now broken the 100×10^8 jin mark. The paper explains the reason for such a success. The experience is essentially the following: (1) Applying chemical fertilizer to increase the unit yield of green manure; (2) applying chemical fertilizer to increase the yield of rape. After pressing to produce oil, from every 120 jin/mu of rapeseeds, 90 plus jin of residue cake is obtained in addition to the large quantity of roots, stems, leaves, and pods, all of which are great nitrogen fertilizer for the grain crop. (3) A proper ratio of phosphorus and potassium is used with the nitrogen fertilizer according to the needs of the soil. (4) Marsh gas and small hydroelectric power plants are being developed to provide new energy source so that all stubbles may be returned to the soil.

6168

CSO: 4009/421

Plant Protection

AUTHOR: ZHU Chenqcheng [2612 2052 1004]
ZHU Tienzong [2612 1131 4912]
ZHOU Jitang [0719 4949 3282]
ZONG Zhenhuan [1350 2182 1403]

ORG: None

TITLE: "Some Opinions on the Application of Pesticides"

SOURCE: Tianjin ZHIWU BAOHU [PLANT PROTECTION] No 3, 8 Jun 81 pp 4-6

ABSTRACT: Based on a review of the administration's attachment to the importance of developing the production and application of pesticides in China since 1952, and some statistics that prove the positive effect of pesticides application to crops' yield, the authors discuss some existing problems of pesticide application in China which include: 1) the very unbalanced and excessive applications in eastern, central and southern China, against its very scanty application in southwestern and northern China; 2) the urgent necessity to develop more efficient but low residual pesticides to replace the current high residual 666, DDT, etc. pesticides; and 3) the immediate need to establishing variable

[Continuation of ZHIWU BAOHU No 3, 8 Jun 81 pp 4-6]

pest control indexes against different pests, strengthening of pest forecasting systems, adoption of multiple pesticides rotation application techniques, and improvement of pesticide application techniques.

AUTHOR: LI Pan [2621 5400]

ORG: Plant Protection Pesticide Laboratory, Chinese Academy of Agricultural Science

TITLE: "A Review on the Present Status and Outlook of Pesticide Formulation"

SOURCE: Tianjin ZHIWU BAOHU [PLANT PROTECTION] No 3, 8 Jun 81 pp 7-9

ABSTRACT: The author introduces the formulations, specifications, properties, characteristics and specific applications of some typical forms of pesticides developed and circulated since World War II, that includes: 1) powder formulation; 2) wettable powder formulation; 3) emulsion formulation; 4) granula formulation; 5) flowable formulation; 6) controlled release formulation; and 7) flotation formulation;

AUTHOR: WANG Junkui [3769 0689 1145]

ORG: None

TITLE: "Everyone Should Heed the Problem of Pesticide Residues in Food"

SOURCE: Tianjin ZHIWU BAOHU [PLANT PROTECTION] No 3, 8 Jun 81 pp 14-15

ABSTRACT: Following a discussion on the importance of paying particular attention to pesticide residue in food and fodder, the author stresses the urgency of prohibiting or restricting the use of such high residual pesticides as 666 and DDT, the adoption of low residue pesticides as their replacement, and strengthening of pesticide application management by devoting major effort to implement the First and Second Trial Standards of Safe Pesticide Application promulgated by the Ministry of Agriculture in 1979 and 1980.

AUTHORS: CHEN Yanglin [7115 2254 2651]
XIE Shuixian [6200 3055 0103]
SUN Yonghou [1327 3057 0624]
QIN Haikuo [4440 3189 7059]

ORG: CHEN and XIE of Plant Protection Department of Chinese Academy of Agricultural Science, SUN of Sichuan Province Jinyang District Agricultural Office, and QIN of Plant Protection Department of Gansu Academy of Agricultural Science

TITLE: "A Preliminary Report on the Control of Wheat Stripe Rust by the Fungicide Bay Meb 6447"

SOURCE: Tianjin ZHIWU BAOHU [PLANT PROTECTION] No 3, 8 Jun 81 pp 18-19

ABSTRACT: Preliminary field experiment on the use of fungicide BayMeb 6447 for the control of wheat stripe rust confirms that the fungicide is 82.1-100% effective when mixed with seeds, 40.18% effective in fields after the first application, and 99.56% effective in fields after the second application. The optimal dosage is 0.03% by weight for seeds, and 20-30 grams per mu for field application. The fungicide used in the experiment was provided by the Isotope Department of the Nankai University and the Shenyang Chemical Engineering Research Institute.

AUTHOR: QIN Jiugang [4440 0036 0474]

ORG: Hubei Jingzhou District Agricultural Office

TITLE: "My Opinion of Extending the Application of Bacillus thuringiensis as a Larvicide"

SOURCE: Tianjin ZHIWU BAOHU [PLANT PROTECTION] No 3, 8 Jun 81 p 39

ABSTRACT: Because of its higher cost, especially in comparison with those of such others as DDT, etc., the author suggests a limiting of its applications mainly to vegetables, fruit trees, tea leaves, tobacco, and food crops, where low concentration is still effective, as well as applied in coordination with other cheaper pesticides. To reduce its cost, more extensive study on its identification, selective breeding, renovation of its production process, and other related research are advocated.

11,206
CSO: 4007/389

Veterinary Medicine

AUTHOR: XUE Minquan [5641 3046 5425]
JIN Yinzhen [6855 6892 3791]

ORG: Both of Veterinary Drug Inspection Center, Ministry of Agriculture

TITLE: "Effect of RBC [Red Blood Cell] on Newcastle Virus HI [Hemagglutination Inhibition] Test"

SOURCE: Nanjing XUMU YU SHOUYI [ANIMAL HUSBANDRY AND VETERINARY MEDICINE] in Chinese No 3, 20 Jun 81

ABSTRACT: Many factors influence the results of chick Newcastle virus HI test, but the RBC of the terminal indicator is one of the important factors. Aside from the breed, age, and gender, the hemagglutinin sensitivity of different donor chick RBC varies a great deal. This paper reports an experiment, the goal of which is to observe the range of variation of hemagglutinin sensitivity of the RBC of different individuals and to search for a way to overcome this variation. RBC specimens of 20 nonimmune chicks (13 hens and 7 cocks) and 7 specimens from immune hens were used to carry out the test. The range of variation of the nonimmune group was found to be $\log_2^5 - \log_2^8$; that of the immune group $\log_2^7 - \log_2^9$. Details of the experiment are reported.

AUTHOR: XU Lishou [1776 4409 0719]

ORG: Shanghai Hematology Research Office, Chinese Academy of Agriculture

TITLE: "Research on Long Strip Pressurized Thin Film Serum Albumin Electrophoresis"

SOURCE: Nanjing XUMU YU SHOUYI [ANIMAL HUSBANDRY AND VETERINARY MEDICINE] in Chinese No 3, 20 Jun 81 pp 3-5

ABSTRACT: In serum albumin electrophoresis, a strip of thin film about 8 cm in length is generally used for various test items and appearance of the various protein zones is limited by the size of the film. For the purpose of improving the differentiation, increasing the number of protein zones, films of 2 different lengths are used. Different electrical voltage and duration are applied to the films for comparison. The experiment is carried out in the hope of obtaining clear isolation, high differentiation, and numerous protein zones under the present laboratory condition using routine electrophoresis instrument. Results indicate that under the condition of 280V 60 minutes, with film measuring 12 x 2.5cm, 8-9 clear zones may be obtained.

AUTHOR: GUI Baolin [2710 1405 2651]
GU Chunhai [7357 2504 3189]
ZHANG Yulin [1728 3768 3829]
LIU Zhonglin [0491 0112 2651]
ZHANG Wei [1728 4885]
GUO Yongsan [6751 3057 2773]
WANG Shuzi [3769 3219 1217]
WANG Yuhua [3769 3768 5478]

ORG: GUI, GU, ZHANG, LIU of Nanjing Municipal Animal Husbandry and Veterinary Medicine Station; ZHANG, GUO, WANG, WANG of Linhe County Animal Husbandry and Veterinary Medicine Station

TITLE: "Application of Convection Immunelectrophoresis in The Diagnosis of Swine Toxoplasmosis"

SOURCE: Nanjing XUMU YU SHOUYI [ANIMAL HUSBANDRY AND VETERINARY MEDICINE] in Chinese No 3, 20 Jun 81 pp 5-8

ABSTRACT: In view of the fact that diagnostic techniques for swine toxoplasmosis introduced here and abroad require specific equipment, are time and labor consuming, or are not sufficiently specific and sensitive, the authors used the technique of repeated freezing of nutrient bodies of toxoplasmosis to form antigen, and with the technique of convection immunelectrophoresis they proceeded with the experiment of examining the serum antibody of pigs of toxoplasma infestation. Results indicate that after antigen inoculation, a complex precipitate line is visible in positive cases on the 7th to the 17th day.

AUTHOR: WU Junhong [0702 0193 1347]

ORG: Ten Thousand Herd Pig Farm, Zengcheng County, Guangdong Province

TITLE: "The Practice of the '333' Breeding System for Small Scale Industrialized Pig Production"

SOURCE: Nanjing XUMU YU SHOUYI [ANIMAL HUSBANDRY AND VETERINARY MEDICINE] in Chinese No 3, 20 Jun 81 pp 18-20

ABSTRACT: With the '333' system, 3 times a month, on the 10th, the 20th, and the 30th, all 60-day old piglets are weaned, and the sows taken to a separate sty. On the 3 days of the 5th, 6th, and 7th, all sows are artificially inseminated once on each day. Three times a month on the 5th, 15th, and 25th, the pregnant sows are brought out of the sty and placed in individual pens until birth and breast feeding time. This system of production organization is suitable for small pig farms producing 2000-3000 pigs a year, or larger farms producing ten to one hundred thousand pigs a year. Merits of this system are discussed.

6248

CSO: 4009/425

Veterinary Medicine

AUTHOR: LIU Xinhua [0491 2450 3232]
ZHANG Weimu [1728 0251 2606]
ZHU Xinhua [2612 2450 3352]
HE Jianhua [0149 1696 5478]

ORG: All of Guizhou Provincial Research Institute of Animal Husbandry and Veterinary Science

TITLE: "Experimental Research on Acupuncture and Moxibustion Points for Electrical Acupuncture Effect on Gastroenteric Diseases of Oxen and Goats"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 6, 81 pp 17-22

ABSTRACT: An experiment was carried out to compare physiological functions, including body temperature, respiration, and heart beat of small groups of black and white oxen, yellow oxen, and goats before and after electrical acupuncture in various acupuncture points. Analyses of blood before and after acupuncture were also performed. It is the conclusion of the authors that electrical acupuncture in 4 groups of Baihui and Jiaochao, Baihui and Biyu, Baihui and Guanyuanyu, and Baihui and Housanli can all produce the action of improving peristalsis of the rumen, and of increasing the white cell count of the peripheral blood. Of these point-groups, Baihui and Guanyuanyu produce more uniform and stable effects. None of these points produce any side effect on either oxen or goats.

AUTHOR: None

ORG: Military Horse Hygiene Research Institute, Guangzhou Military District

TITLE: "Research on the Alkaline Supplement Formula for Correction of Acidosis of Horses and Mules and Its Clinical Application"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY] in Chinese No 6, 81 pp 22-25

ABSTRACT: In acute enteritis of horses and mules, endotoxin blood disease often induces microcirculation impairment to lead to serious metabolic acidosis, and the technique of judging the extent of acidosis and calculating the quantity of alkali to be used to correct the condition is a problem of common occurrence in veterinary medicine. Based upon sodium hydrogen carbonate tolerance tests carried out on healthy horses, and plasma CO₂ binding tests, the authors believe ten times the traditionally administered quantity (intravenous injection of 300-1000ml of 5 percent sodium hydrogen carbonate solution, 1-2 times/day) should be given for effective treatment of acidosis.

AUTHOR: ZHANG Zhenxing [1728 2182 5281]

ORG: Department of Animal Husbandry and Veterinary Medicine, Nanjing College of Agriculture

TITLE: "Current Quality of Injection Solutions for Animal Use and Quality Analysis"

SOURCE: Lanzhou SHOUYI KEJI ZAZHI [JOURNAL OF VETERINARY SCIENCE AND TECHNOLOGY]
in Chinese No 6, 81 pp 26-30

ABSTRACT: Medicinal injection solutions for animal use have been extensively developed in recent years. According to a preliminary survey of Heilongjiang Province in 1978, there were 34 producers of veterinary drugs, but only the products of 3 or 4 of these met the quality standard of the State. The problem of quality is similar all over the country, and even more serious in Jiangsu, Liaoning, and Shandong Provinces. In 1976-79, the author took random samples of injection solution products of 23 manufacturers of 10 provinces (cities) to inspect their quality and found 2/3 of the products to be less than standard quality. The author was happy to report that 100 percent of such products manufactured in Shanghai met the quality standard. About 97.1 percent of the disqualified products cannot meet the standard for transparency. Factors contributing to the inferior quality of these products are analyzed.

6248

CSO: 4009/427

AUTHOR: YE Zhizhang [5509 2535 1757]
YU Li [0060 0500]
TU Guangchou [3205 0342 0321]
RUAN Changgeng [7086 7022 5105]
CHEN Chongkun [7115 6850 0981]
et al.

ORG: YE, YU and TU, et al., all of the Kunming Institute of Zoology, Chinese Academy of Sciences; RUAN and CHEN, et al., all of the Department of Blood Diseases, Suzhou Medical College

TITLE: "The Action of Fibrinolytic Principle Obtained from the Venom of Agkistrodon halys (Pallas) on the Blood Coagulation System"

SOURCE: Kunming DONGWUXUE YANJIU [ZOOLOGICAL RESEARCH] in Chinese No 1; Feb 81 pp 33-40

TEXT OF ENGLISH ABSTRACT: The fibrinolytic principle was obtained by DEAE-Sephadex A-50 column chromatography and Sephadex G-100 gel filtration from the venom of Agkistrodon halys Pallas. The experiment, both in vitro and in vivo, suggests that the fibrinolytic principle acts on fibrin and fibrinogen and is able to hydrolyze factor VIII and factor V. The properties of the fibrinolytic principle of Agkistrodon halys Pallas venom are similar to those of plasmin; therefore, it is a plasmin-like substance.

AUTHOR: YE Zhizhang [5509 2535 1757]
TU Guangchou [3205 0342 0321]
RAN Yonglu [0373 3057 4389]
YU Li [0060 0500]
RUAN Changgeng [7086 7022 5105]
CHEN Chongkun [7115 6850 0981]
et al.

ORG: YE, TU, RAN and YU all of the Kunming Institute of Zoology, Chinese Academy of Sciences; RUAN and CHEN, et al., all of the Department of Blood Diseases, Suzhou Medical College

TITLE: "The Action of Anticoagulant Principles Obtained from the Venom of Agkistrodon halys (Pallas) on the Blood Coagulation System"

SOURCE: Kunming DONGWUXUE YANJIU [ZOOLOGICAL RESEARCH] in Chinese No 1, Feb 81 pp 41-47

TEXT OF ENGLISH ABSTRACT: An anticoagulant principle was obtained from the venom of Agkistrodon halys produced in Zhejiang Province by means of DEAE-Sephadex A-50 and CM-Sephadex C-25 column chromatography. The effect of the principle on blood coagulation both in vitro and in vivo was studied. In vitro, it prolonged remarkably plasma recalcification time and one-stage plasma prothrombin time, but did not prolong thrombin time and did not dissolve fibrin. It could inhibit formation

[Continuation of DONGWUXUE YANJIU No 1, Feb 81 pp 41-47]

of blood thromboplastin and tissue thromboplastin even at low concentrations. In a rabbit, through intravenous injection, the principle caused a marked and transient prolongation of whole blood coagulation time, plasma recalcification time, one-stage plasma prothrombin time and thrombin time, and decreased suddenly in the rabbit fibrinogen level below 22 percent at 10 minutes after injection, but the Ac-globulin dissolution time was not shortened.

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